Supplement to

FARM POLICY IN THE YEARS AHEAD

A Report of the
National Agricultural
Advisory Commission

PUBLISHED THROUGH THE FACILITIES OF THE
UNITED STATES DEPARTMENT OF AGRICULTURE

Supplement to

FARM POLICY IN THE YEARS AHEAD

A Report of the National Agricultural Advisory Commission

PUBLISHED THROUGH THE FACILITIES OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D.C. November 1964

FOREWORD

These papers were written for the National Agricultural Advisory Commission at the request of its subcommittee on Farm Policy Review. The authors were requested to review the recent past and current situation and to analyze alternative programs. The authors did not make recommendations, as the papers were intended as background material for the use of the subcommittee and the members of NAAC.

NAAC is most grateful to the authors of these papers for their valuable work. The papers have provided NAAC with insights into many problems. They are published at this time so that others may have the benefit of the background material contained in them.

CONTENTS

THE FREE MARKET AS A FARM POLICY ALTERNATIVE 1/

Donald R. Kaldor
Iowa State University

Should price supports and production controls be eliminated and the pricing of farm products returned to the free market? Few farm policy questions can generate more heated debate. Farm leaders are sharply divided on the issue. General interest in the question seems to be increasing, however. In recent years, several studies on the subject have been prepared or published by congressional committees, the United States Department of Agriculture, and land-grant colleges and universities.

A reflective answer to this question involves two principal considerations: (1) The consequences which are expected to flow from such a policy change and (2) the values to be assigned to these consequences in judging their net effect on social welfare. According to a wide range of personal values, some of the consequences of such a policy change will be judged desirable; others will be judged undesirable. People will give different answers to the question if they anticipate different consequences or if they assign different welfare values to these consequences. This paper focuses on the first of these considerations--the consequences that would result from a no-support and no-control policy.

A shift to a no-support and no-control policy would generate numerous effects--some economic, some sociological, and some political. While all the significant consequences of a policy reorganization should be taken into account in judging its net desirability, this discussion will be limited mainly to economic effects.

In principle, the consequences of adopting a no-support and no-control policy are subject to objective determination. With sufficient information, the direction and magnitude of the effects could be estimated within acceptable limits of error. In the present state of economic knowledge, however, many of the economic effects cannot be measured quantitatively. Some of the estimates that can be made are subject to errors of unknown size partly because judgments have to be made about imperfectly known relationships. As a result, competent economic analysts are not in complete agreement on all the important consequences that might flow from adopting such a policy. But there is substantial agreement on many of the short-run effects. This will become evident in reviewing some of the results of recent studies. Agreement, however, tends to fade when the time horizon extends much beyond 3 to 5 years.

For the purpose of this discussion, it is assumed that the shift to a no-support and no-control policy would occur during a 5-year transitional period.;2/ During

---

1/ A paper prepared for the National Agricultural Advisory Commission at the request of Professor George E. Brandow, chairman of a technical group responsible for developing background materials for use by the Committee in preparing price policy recommendations.
2/ The assumption of a transitional period of 5 years was suggested by Professor Brandow.

this period, price support levels would be reduced and production controls would be lifted so that there would be no further accumulation of stocks, and at the end of the period all supports and controls would be eliminated. Agricultural programs with nonsupport objectives would be continued at current levels. Those with both support and related nonsupport objectives, such as the P.L. 480 program, would be gradually reduced to eliminate the strictly surplus disposal or support features. Government owned stocks in excess of levels needed for national security would be disposed of under long-range foreign economic development and domestic nutritional programs. It also is assumed that the general economy would grow at a favorable rate with unemployment somewhat below the recent level, reflecting the effects of recently introduced public programs to reduce structural and cyclical unemployment.

Attention will be focused first on the effects of the assumed policy change on production, prices, and incomes in the farm industry. Then, these consequences will be related to broader policy considerations involving two questions: (1) What would happen to the size of the real national income and (2) what would happen to the personal distribution of income? As background for examining these effects, developments leading up to the current farm situation are briefly discussed.

Background Developments

During the past decade, the farm industry's capacity to turn out products has exceeded market demands at current prices by roughly 8 percent. This excess capacity has been the result of a rapid increase in the average productivity of farm resources. The rise in output per unit of input has been associated with the introduction of new and improved forms of capital input, better production practices, an upgrading of the quality of labor-management input, and other forces. These factors have been shifting the relative productivities of land, labor, and capital and modifying the resource characteristics of the well-organized farm. As farmers have adjusted to these changes, farms have been getting larger, labor input has been declining, and the number of farms has been decreasing. But though the rate of adjustment has been rapid in terms of historical standards, it has not been rapid enough to keep pace with the forces creating the need for adjustment. The result has been a serious and persistent problem of excess resources, largely in the form of too much labor.

For a time, the output from the excess capacity was simply removed from markets under the loan and purchase programs. As excessive stocks accumulated, production controls were instituted. First, marketing quotas were placed on wheat, cotton, peanuts, rice, and tobacco; corn was put under acreage allotments. These programs, however, had little effect on total farm output, although they did change the product mix. Producers shifted resources from controlled crops to unrestricted crops, and this increased the market imbalance in feed grains.

The failure of these programs to reduce total output prompted a more generalized control effort with features that limited substitution among crops. The newer control programs were based on the withdrawal of land from current farm production. In 1962 about 46 million acres of cropland were withdrawn under the land retirement programs. The output decreasing effects of these programs have been substantial. In recent years, they have greatly reduced the imbalance between current output and market demand at existing prices. Briefly, this is the supply-demand situation at the beginning of the assumed transition to a policy of no supports and no controls.

The key to the economic effects of a no-support no-control policy is found in the response of farm resources and production to a decline in farm prices. Unfortunately, present knowledge of the relevant supply relationships is quite fragmentary. Informed judgments are required if one is to reach any conclusions about short-run (transition period) effects. Guesses are necessary for longer-run effects.

If the output forthcoming from the farm industry under a no-support no-control policy were produced at minimum resource cost, and if farmers were quick to shift their labor and capital to higher paying nonfarm employments in response to a decline in relative earnings in farming, farm production would respond rapidly to a fall in farm prices. An excess supply of farm products would soon be eliminated by a decrease in production. Prices and resource earnings in farming would quickly recover and the industry would soon reestablish economic balance.

For many reasons, the conditions for speedy adjustment of output are not closely approximated in the farm industry. In the short run, an excess supply of farm products induces a relatively large drop in farm prices and resource earnings because of the low price elasticity of demand. But a large decline in earnings does not prompt a rapid reallocation of resources and adjustment in production. Thus, there is a strong tendency for the excess supply to persist.

At present, most of the farm industry's excess capacity is being neutralized by the land retirement programs. The lifting of controls during the transitional period would bring most of the retired land back into crop production. 3/ A small amount which was turned to trees and wildlife areas under the conservation reserve program probably would remain in these uses. The principal factor that might prevent the rest of this land from returning to farm production would be declining farm prices. But in the absence of more attractive Government rental (payment) rates, the income producing capacity of most of this land over a wide range of prices still would be positive, and higher in farm uses than in nonfarm uses.

During the transition period, small amounts of land in farms would continue to be absorbed in meeting growing demands for urban development, transportation, and recreation. It also is likely that a large drop in farm prices would prompt a small amount of land abandonment. The return on some of the poorest farm land would drop to a point where it no longer had any value. But these reductions in land for farm uses would be small in relation to the amount that would return to farm production with the termination of the control programs. By 1970 total acreage in crops and fallow probably would be almost as large as that in 1953, the last recent year of unrestricted production.

Under declining farm prices, there would be increasing pressure to utilize less labor and capital in relation to land. However, a large shift in the direction of more extensive land use, such as the conversion of wheat land into grazing land in parts of the Great Plains, typically involves a major reorganization of resources with reduced farm employment and fewer and larger farms. This takes time and it is frequently expensive in terms of current income. Without special programs to speed up extensification, relatively little of this kind of adjustment probably would occur during the transition period.

Undoubtedly, a substantial reduction in farm prices would accelerate the decline in farm employment. If the shift to a no-support and no-control policy were announced

---

3/ Elimination of controls over a period of less than 5 years presumably would not affect some land withdrawn under long-term conservation reserve contracts. By 1970 all the long-term contracts will have expired, however.

in advance, so that long-range expectations were affected, the rate of operator entry into farming probably would fall, the rate of operator "quits" for nonfarm employment probably would rise, and the rate of operator retirement might increase.4/ This would speed up the consolidation of farms into larger and more efficient units. But during the transition period, it is probable that the output reducing effects of less labor input would be at least offset by the output increasing effects of greater resource productivity usually associated with farm consolidation. Under present conditions, there are many opportunities in the farm industry to increase output and at the same time reduce total input. Until these opportunities have been more fully exploited, accelerating the decline in labor input would not be likely to reduce farm output, although it would contribute to overall economic efficiency and higher farm income per person.

Declining farm prices also would have a dampening effect on the use of short-term capital inputs, such as fertilizer and commercial feed, on farms that have been employing near optimum amounts at current prices. But other farms could profitably use more of these inputs at lower prices. In the short run, the quantity of fertilizer used on many soils apparently is not highly responsive to product price changes. While the total input of these capital items probably would decline in response to a sharp drop in prices, the size of the cutback likely would be small during the transition period.

During the 5-year transition period, introduction and wider use of advances in farm technology would continue, although by the end of the period the rate of advance probably would be slowed down. A sharp decline in farm prices would put a brake on net investment in the farm industry by reducing internal savings and by lowering the return on capital. Competitive forces within the industry, however would provide individual producers with incentives to use new total cost reducing technologies and other forms that do not involve large capital outlays.

While a rapid decline in farm prices during the transition period undoubtedly would restrain the rate of expansion in farm production, it is reasonably clear that farm output at the end of the period would be substantially greater than at the beginning. The transfer of labor from farming would be speeded up, but during the transition period this probably would not be enough to offset more than a small fraction of the output increasing effects resulting from the release of land under control programs and rising productivity associated with farm consolidation and advancing technology.

This conclusion is supported by several recent studies projecting the effects of a policy of no supports and reduced controls. 5/ Output projections made in these studies for major farm products are shown in table 1. Although there was some variation in underlying assumptions and in projection periods, all of these studies projected large increases in production under a policy of no supports and reduced controls. Studies A, B, D, and E assumed that 30 million acres of cropland would remain out of production during the projection period. Still, the projected increases in output for most products were large. Study C covered a more recent period and assumed a declining amount of land in the conservation reserve as a result of maturing contracts. At the end of the projection period, 13 million acres still would be under contract. In general, the output projections of this study showed greater increases over base period levels than those of the other studies.

4/ A recent study in Iowa indicates that the supply of young entrants in farming may be highly responsive to a change in relative income earning opportunities. See Research Bulletin 508, Agricultural and Home Economics Experiment Station, Iowa State University, 1962.

5/ See footnotes in table 1 for identification of these studies.

Table 1.--Selected farm production, price, and income projections under a policy of "no supports and reduced controls" as reported in specified studies

Item		Study A 1/		Study B 2/		Study C 3/		Study D 4/		Study E 5/	
Projection period		1960-1965		1960-61 to 1962-63		1963-1967		1960-1965		1960-1965	
Base period 6/		1959		1959-60		1962		1959		1959	
	Level unit	1965 level	Percent change 7/	1962-63 level	Percent change 7/	1967 level	Percent change 7/	1965 level	Percent change 7/	1965 level	Percent change 7/
Production:											
Corn	bil. bu.	4.2	- 3	4.2	- 4	4.4	+21	8/	---	4.0	- 9
Wheat	bil. bu.	1.35	+20	1.36	+22	1.42	+30	8/	---	1.25	+12
Cotton	mil. bales	18.8	+28	14.1	- 4	8/	---	8/	---	19.2	+30
Cattle	bil. lb.	34.1	+16	37.1	+15	38.0	+25	8/	---	34.7	+23
Hogs	bil. lb.	23.8	+11	22.5	+ 4	22.8	+12	8/	---	25.7	+21
Milk	bil. lb.	143.8	+16	143.5	+13	142.0	+13	8/	---	140.0	+12
Prices:											
Corn	$ per bu.	.77	-28	.66	-38	.85	-24	.98	- 8	.80	-25
Wheat	$ per bu.	.87	-50	.74	-57	.94	-53	1.18	-33	.90	-49
Cotton	$ per lb.	.21	-34	.21	-33	NA	---	.25	-21	.25	-22
Cattle	ct. per lb	.171	-24	.120	-46	.158	-26	.150	-34	.150	-34
Hogs	ct. per lb	.110	-23	.110	-19	.135	-17	.140	- 1	.112	-21
Milk	ct. per lb	3.67	-12	2.67	-32	3.82	-10	3.80	- 8	3.60	-14
Income:											
Gross farm income	bil. $	34.6	- 8	8/	---	37.3	- 9	34.9	- 6	34.8	- 7
Total production expenses	bil. $	27.3	+ 5	8/	---	29.7	+ 5	26.0	0	27.8	+ 6
Realized net farm income	bil. $	7.3	-36	8/	---	7.6	-40	8.9	-19	7.0	-38

1/ Joint Economic Committee, Economic Policies for Agriculture in the 1960's, Implications of Four Selected Alternatives, United States Government Printing Office, 1960, Part I and Appendix A, prepared by Walter W. Wilcox and George E. Brandow.

2/ Shepherd, G., A. Paulsen, F. Kutish, D. Kaldor, R. Heifner and G. Futrell, Production and Income Estimates and Projections for the Feed-Livestock Economy Under Specified Control and Market-Clearing Conditions, Special Report No. 27, Agricultural and Home Economics Experiment Station, Iowa State University, August 1960.

3/ Tweeten, L. G., E. O. Heady and L. Mayer, Farm Program Alternatives, Farm Incomes and Public Costs Under Alternative Commodity Programs for Feed Grains and Wheat, CAED Report No. 18, Iowa State University in cooperation with Oklahoma Agricultural Experiment Station, May 1963. Projections are those represented by U_2 alternative.

4/ Robinson, K. L., Possible Effects of Eliminating Direct Price Support and Acreage Control Programs, Farm Economics, No. 218, Department of Agricultural Economics, New York State College of Agriculture, Cornell University, October 1960.

5/ U. S. Senate, Committee on Agriculture, Report from the United States Department of Agriculture and a statement from the Land-Grant Colleges IRM-1 Advisory Committee on Farm Price and Income Projections, 1960-65, Under Conditions Approximating Free Production and Marketing of Agricultural Commodities, Senate Document No. 77, 86th Congress, 2nd Session, January, 1960.

6/ Base period refers to the year preceding the first year of the projection period.

7/ Percentage changes are based on the differences between the base period values and the projected values for the last year of the projection period.

8/ Not available in published report.

While competent analysts may disagree on the exact size of the increase in farm output that would occur over a 5-year transition period to no supports and no controls, there probably would be general agreement that the increase would be large. The amount of resource adjustment needed is so large and the unassisted adaptability of the industry is so small that a reasonable balance between output and market demand at opportunity costs prices would be unlikely at the end of the transition period.

Over a longer period, opportunities would be greater and the prospects appear more optimistic. During the next decade, a high proportion of present farm operators will die or retire. With appropriate incentives to discourage entry and to encourage some of the younger operators to transfer to higher paying nonfarm employments, and with programs to assist the reorganization of the industry into fewer and larger farms and toward more extensive land use, the chances are pretty good that the problem of excess resources could be largely solved. Simply eliminating supports and controls, however, is not likely to get the job done, certainly not without creating a lot of unnecessary stresses and strains and personal hardship.

Prices

A large increase in farm output during the transition period would have a sharp effect on farm prices because of low consumer response to declining food and fiber prices. While the total demand for farm products would continue to grow with rising population and growing per capita income, this would absorb, at constant prices, only a small part of the likely increase in farm output. A 1 percent rise in output relative to demand would reduce farm prices by roughly 4 or 5 percent. If the excess supply measured at recent prices were to remain as large as 7 percent, relative farm prices would decline an average of 30 to 35 percent.

The price projections reported by the various "near free market" studies are reasonably consistent with this outcome (table 1). Studies A, B, D, and E, covering all or part of the 1960-65 period, projected price declines from 1959 levels ranging from 8 to 38 percent for corn, 33 to 57 percent for wheat, 21 to 34 percent for cotton, 24 to 46 percent for cattle, 1 to 23 percent for hogs, and 8 to 32 percent for milk. Because of compensating variations, the studies differed less in their projections of the average decline in prices than in the reductions projected for individual products. For example, Study D projected a 34 percent decline for cattle but only a 1 percent decline for hogs, while Study A projected a 24 percent drop for cattle and a 23 percent decline for hogs. Much of the variation for individual products was associated with differences in the projections of producers supply response.

Study C, which covered the 1963-65 period and assumed a diminishing amount of land in the conservation reserve, projected price declines from 1962 levels of 24 percent for corn, 53 percent for wheat, 26 percent for cattle, 17 percent for hogs, and 10 percent for milk. These were not strictly free market prices, however, since it was assumed that Government storage activity would maintain prices at these levels. Some accumulation of wheat and feed grain stocks was also projected. Even so, the projections point to large decreases in farm prices.

The decline in prices at the farm level would be accompanied by a decrease in retail food prices. Because of stability in farm to retail margins, the decline in retail food prices would be proportionally smaller than in prices at the farm level. Projections of retail price effects were reported only in Study B. For livestock products, the reductions ranged from 27 percent for beef to only 6 percent for eggs. Prices at the farm level were projected to decline 34 percent and 14 percent, respectively.

Farm Income

With farm prices declining more rapidly than farm output was expanding, total receipts from farm marketings would fall during the transition period. Receipts from Government payments also would decline, since the lifting of controls would reduce land retirement payments and the elimination of supports would decrease deficiency payments under the wool program. In 1961 these payments amounted to about $1.2 billion. Thus, gross farm income would decline.

The "near free market" studies projected decreases in gross farm income ranging from $2.5 billion to $3.5 billion, or from 6 percent to 9 percent of base year levels (table 1). In Studies A, D, and E the projected levels of gross farm income varied from each other by only $300 million. Total income and expense projections were not reported in Study B. Study C, covering the 1963-67 period, projected a decline in gross farm income of $3.5 billion, or 9 percent from the actual level in 1962. Undoubtedly, these figures would be larger under the no-support and no-control assumptions of this paper.

Total production expenses almost certainly would not decline during the transition period, and they probably would increase. Prices paid by farmers likely would continue to edge upward. The return to farm production of cropland withdrawn under the control programs would tend to increase quantities of purchased inputs. While low prices probably would prompt some cutback in the use of certain purchased inputs toward the end of the transition period, it is likely that the total quantity of purchased inputs used by farmers at the end of the period would be larger than at the beginning.

Three of the four "near free market" studies projected increases in total production expenses. Two studies projected increases of 5 percent, one study projected an increase of 6 percent, and the fourth projected no change.

With a substantial decline in gross income and a smaller increase in production expenses, total net farm income would decline sharply. Since total production expenses take a high proportion of total gross income, a given percentage decline in gross income would be magnified into a much larger percentage change in net income. In the "near free market" studies, projected decreases in total net farm income ranged from $2.4 billion to $5.0 billion, or from 19 percent to 40 percent of the base year levels (table 1). The largest decline was projected by Study C, covering the 1963-67 period. Although this study reported a 40 percent drop in net farm income, the projection did not represent a strict no-support and no-control situation since it was assumed that there would be some price support activity and that 13 million acres would remain in the conservation reserve at the end of the projection period.

There can be little doubt that total net farm income would drop sharply during a transition period to free markets. The percentage reduction in net farm income per farm would be smaller, but still large. With some increase in the rate of decline in farm numbers, particularly toward the end of the period, net farm income per farm might drop about 25 percent. Because of a likely acceleration in the decline in farm population, and an increase in income per person from nonfarm sources, the percentage decline in per capita income of farm people probably would be still smaller, perhaps on the order of 15 to 20 percent.

Federal Expenditures

During the transition period, Government expenditures for current price support and production control programs would decline. Likewise, there would

be a reduction in commodity storage and handling costs. By the end of the period, expenditures would be eliminated for current market removals under the loan and purchase programs, the wool program, and the land retirement programs.

In the two fiscal years ending June 30, 1964, average annual expenditures for price support and production control programs appear to have been about $2.6 billion. Spending for foreign and domestic disposal activities amounted to roughly $2.2 billion. The sum of these expenditures comprised about 70 percent of all Federal expenditures classified as "agriculture and agricultural resources" and 4 percent of total Federal expenditures.

If it is assumed that about one-half of the expenditures for disposal activities would be continued under permanent foreign economic development and domestic nutritional programs, the ending of price supports and production controls could involve an ultimate reduction in expenditures of about $3.7 billion annually. If other Federal expenditures remained constant, such a decline would reduce total Federal spending by slightly more than 3 percent.

Only two of the five "near free market" studies reported projections of farm program expenditures. Study D projected a short-run reduction of $1.5 billion per year and an ultimate savings of $3.5 billion annually. The projected short-run reduction assumed a continuation of the conservation reserve and foreign disposal activities at 1960 levels of operation.

In Study C, Government expenditures for feed grain and wheat programs were projected to decline about $1.3 billion or 50 percent over the 1963-67 projection period. Total Government expenditures for agriculture were projected to drop from about $7.0 billion to $5.9 billion. In arriving at the projection for total agricultural expenditure, however, it was assumed that spending for programs other than those involving wheat and feed grains would remain constant, apparently at 1962 levels. The expenditure projections for wheat and feed grain programs were based partly on a 13 million acre conservation reserve and a low level of supports that would result in some market removals. A generalized no-support and no-control policy undoubtedly would reduce agricultural spending substantially more than the amount suggested by these figures.

Real National Income

What would happen to the level of real national income (national output of goods and services) under a no-support and no-control policy? During the transition period, the farm component of national output would increase. The increase would be largely a result of the reemployment of land withdrawn from current production under the control programs. The amount that would be added to real national income would depend both on the extent of the increase in farm output and on the prices used in evaluating farm output.

Suppose that farm output rose 7 percent and farm prices dropped 30 percent during the transition period, and suppose that at these prices the farm component of national output before the adoption of the no-support and no-control policy was 4 percent. If nonfarm output remained constant, real national income would rise by roughly 0.3 of 1 percent during the 5-year transition period.

The nonfarm component of real national income, however, would tend to be affected also. Some people have argued that a substantial decline in farm prices and incomes would bring on a general depression by reducing total demand for goods and services. Unemployment would rise and nonfarm output would fall. As a result,

real national income would decline. This view, however, rests on some highly unrealistic assumptions. Undoubtedly, a sharp drop in farm income would reduce farm demands and this, in turn, would decrease incomes generated in industries and areas heavily dependent on farm spending. But there also would be offsetting forces operating to raise nonfarm demands and nonfarm spending. In an economy where the farm component of national income is less than 5 percent, it is likely that the net effect on total demand for goods and services would be very small.

Under conditions of high level employment in the economy, the nonfarm component of real national income undoubtedly would increase during the transition period. By the end of the period, some additional resources (mostly labor) would have shifted from farming to higher paying nonfarm employments. Also, some resources currently absorbed in operating the farm support and control programs would have shifted to other activities. These reallocations would increase nonfarm output and contribute to a larger real national income.

This gain in national income, however, would be small compared to the potential gain to be realized by further reallocations of farming resources after the transition period. The low relative earnings of labor and capital in farming at the end of this period would indicate that much of the basic problem of excess resources remained to be solved. While the acceleration of adjustments during the transition period would contribute to a more efficient allocation of the economy's resources, only a minor part of the potential gain in national income would be realized. During the transitional period, the additional adjustment induced by a no-support and no-control policy would be small in relation to the amount that would be needed to fully realize the potential gain in national income.

Income Distribution

A change to a no-support and no-control policy would have important effects on the distribution of personal income. During the transition period, the decline in farm prices relative to nonfarm prices would cause a redistribution of real income from farm people to nonfarm people. With lower retail prices for food and fiber, nonfarm people could buy a larger collection of goods and services with their money incomes. The money incomes of farm people, however, would decline more than in proportion to the fall in the prices of things they would buy for consumption, so their real income would decrease. The incidence of the real income decreasing effect would tend to be concentrated, whereas the incidence of the real income increasing effect would tend to be widely dispersed. As a result, the average decrease in real income of farm families would tend to be large relative to the average increase in real income of nonfarm families.

There also would be some income distribution effect via the Government's budget. If the savings in public expenditures prompted a proportional decrease in personal income tax payments, farm people as well as nonfarm people would have smaller tax liabilities. But the average income tax payment is higher for nonfarm people than for farm people. So the net effect would be to increase farm-nonfarm income differences. If the tax cut were to go only to people in the lowest income brackets, the result might be different. If a higher proportion of farm people were in the lower income taxpaying brackets, the average tax savings would tend to be higher in the farm sector. In this case, farm-nonfarm income differences would decline.

In the short run, a policy of no supports and no controls also would substantially affect the distribution of income among farm families. The reduction in total net farm income over the transition period would tend to be distributed among farms in almost direct proportion to the amount of output sold. This would mean that the

percentage reduction in gross farm income would be quite similar on different farms producing the same mix of products. Since there is a high positive correlation between the amount of output sold by a farm and the size of the farm's net income, farms with high net incomes would experience a much larger absolute reduction in income than farms with small net incomes. Consequently, absolute income differences among farm operator families and farm landlords would diminish. Most of the reduction in total farm income would be experienced by farm families with the higher incomes. These are the families that have experienced most of the income increasing effect of the price support and control programs.

Community Adjustment Problems

Many predominantly rural communities have been losing population as the demand for labor in farming has declined without offsetting increases in local nonfarm labor demands. A shift to a no-support and no-control policy would accelerate this trend. The decline in farm incomes and the more rapid loss of population would speed up the reduction in demands for local retail services, particularly for consumer oriented products. Likewise, local demands for public services would decline more rapidly. Retail businesses, schools, churches, and local government units would be under greater pressure to adjust their operations to reduced demands.

Some of the population receiving communities, typically those with fast growing industrial sectors, would experience more rapid increases in demands for public and private goods and services. The problems associated with meeting these demands would increase. With the speedup in population transfer, the number of personal adjustment problems also would increase.

For the most part, however, a no-support and no-control policy would not create new kinds of community adjustment problems. It would add to the size of the problems that already exist and accelerate changes now in process. Compared to those created by natural increase in population and other forces inducing the movement of people, the national impact on community adjustment problems would not be large. But for many small rural communities, the increased size of these problems probably would generate intense adjustment pressure.

Conclusion

For a period of time about which it is possible to say something reasonably firm regarding consequences, it is clear that a no-support and no-control policy would be quite inadequate for the task of solving the problem of excess resources in the farm industry. Beyond this period, one can only speculate about what might or might not happen.

Such a policy would provide more accurate signals and more effective incentives for guiding and encouraging resource adjustments than recent pricing policies. Accurate signals and effective incentives are an essential ingredient of any serious effort to achieve a permanent solution to the excess resource problems. If all that was needed were small (marginal) adjustments in resources, a policy of no supports and no controls might be sufficient. But the adjustment problems are large and the unassisted response of labor and capital in farming to a decline in relative earnings is small. Without positive programs to increase this response, the adjustment process would not be greatly accelerated during the transition period. So the contribution which a no-support and no-control policy would make to achieving a better balanced farm industry would be quite modest, although probably significant.

It also would allow farmers greater freedom of decision making in their business and would permit a substantial reduction in Federal spending for farm programs.

These "gains" would be purchased at the "cost" of a substantial decline in the average income of farm families but with some reduction in income inequality within agriculture. However, this would be achieved not by increasing the incomes of low income families, but by reducing them less than the incomes of high income families. In common with policies aimed at increasing income by increasing prices, a no-support and no-control policy would make little positive contribution to solving the income problems of farm families with inadequate resources.

FEED GRAINS - A SITUATION PAPER

James Kendrick and Howard Ottoson
University of Nebraska

This discussion is intended to summarize tersely the available knowledge about past, present, and prospective production and consumption of feed grains, the discernible impacts of past policies, and the probably impacts of alternative courses of action at the policy level. In a real sense the situation and problems of feed grains represent the situation and problems of agriculture. The four crops commonly termed feed grains, corn, sorghum, barley, and oats represent nearly 30 percent of the value of crops raised, and over a third of the harvested acreage. Soybeans add 8 percent more to the total value, and occupy an additional 10 percent of the acreage.

In considering feed grains one should not ignore the quantities of nongrain feed of all kinds produced, including hay and pasture, nor the supply demand of the livestock industry. While recognizing the above, our attention in this paper will be directed only at feed grains. This was our assignment and the major economic problems of the feed-livestock economy are shown, for various reasons, in the feed grain sector.

Supply and Demand ın Retrospect

Production - Ever Expanding

Between 1950 and 1963 the production of feed grains rose from 113 million tons to 156 million tons, or almost 40 percent in 13 years. This increase has not come steadily, of course. It occurred rapidly between 1956 and 1960, stabilized in the following 2 years, and then showed a large increase in 1963. (See figure 1.) Current production, plus byproduct feeds, a small quantity of imported feed grains and carryover stocks give the supply available in any given year from which the livestock of the country are fed. The supply generating ability of the feed grain sector is illustrated by figure 2.

During this period exports of feed grains increased at a rather rapid rate, from 6.4 million metric tons in 1956-57 to 16.2 million metric tons in 1963-64. However, much of the increased production of feed grains between 1952 and 1960 went to increased stocks. In 2 years the net accumulation was 10 million tons per year. Stocks of corn, the chief component, reached a peak of 2 billion bushels in 1962. Apparently total feed grain carryover for 1964 is to be about 70 million tons, up 7 million tons from 1963.

The plaguing question at this point is, ''why the buildup?'' Ordinarily one would reason that supply responds to demand, and look for demand factors for the answer. Let us examine this hypothesis.

The Demand for Feed Grains

The demand for feed grains is dependent on the demand for livestock. One would expect that it would be heavily dependent upon the size of the population and affected to a smaller degree by the increase in the real income of consumers. The effects of these factors are relayed to the feed grain economy through the retail prices of livestock products. These factors, in turn, are affected by marketing charges on

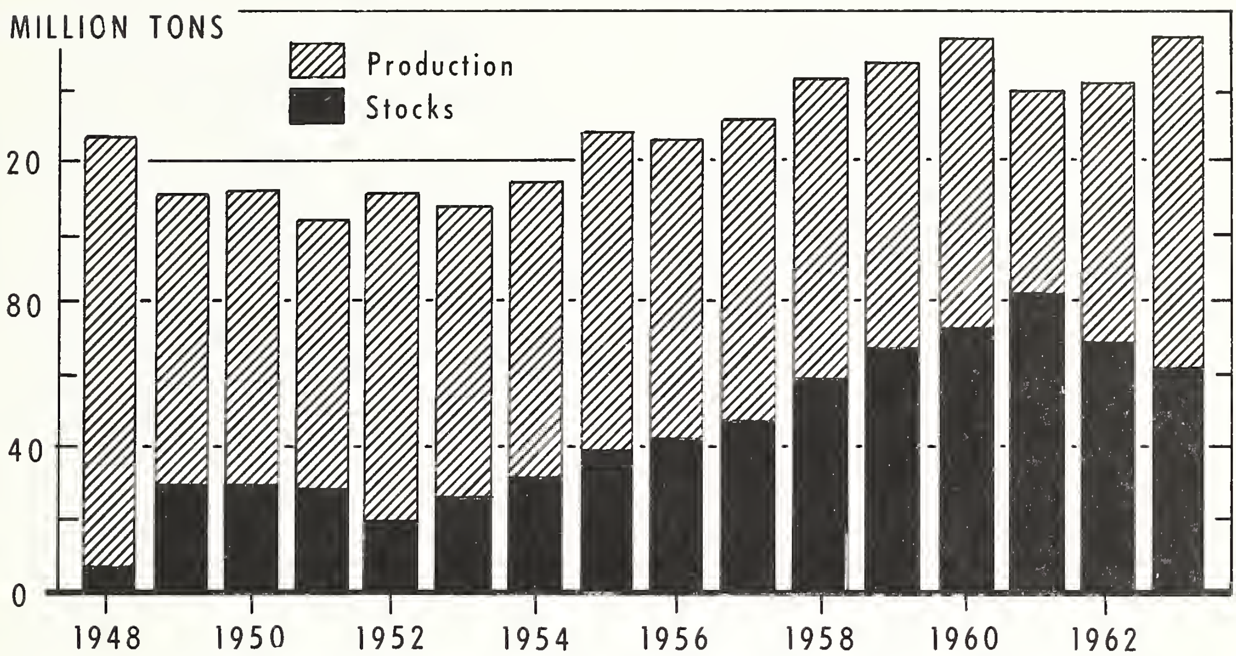

Figure 1. Feed Groin Production ond Stocks, 1948-1963 (U.S. Deportment of Agriculture Doto)

livestock products, which are then reflected by farm prices of livestock products. Finally all these factors influence the demand for feed grain.1/

Corn is the most important of the feed grains. Since feed grains can easily be substituted as feeds, the price of corn can be used as an indicator of the price of feed. (Fox has shown that a change of .91 percent in the price of all feed grains received by farmers is associated with a 1-percent change in the price of corn.) A 1-percent change in consumer demand for meat has a transmitted effect of 1.3 percent on the price of corn; a 1-percent change in corn production has an effect of perhaps 1.8 to 2.0 percent on the price of corn. This indicates that the demand for corn is inelastic.

With the above in mind, we note that the price of feed grains trended downward from 1951 to 1960. In the fourth quarter of 1951 the index of prices received for feed grains was 150 (1957-59 = 100). In the same period in 1960 the index was 86, a drop of 43 percent. It has been relatively more stable since 1960, but rose to an index of slightly more than 100 in 1963, when the price of corn rose to more than $1.20 per bushel.

The Nature of the Supply Response

The supply of feed grains in any one year is considered to be inelastic. It is positive, which means that farmers are expected to respond directly to price changes. How then can we explain logically the type of supply response which has occurred in

1/ See Karl A. Fox. Econometric Analysis for Public Policy. Ames: The Iowa State College Press. 1958. Pages 108-9; 225-6.

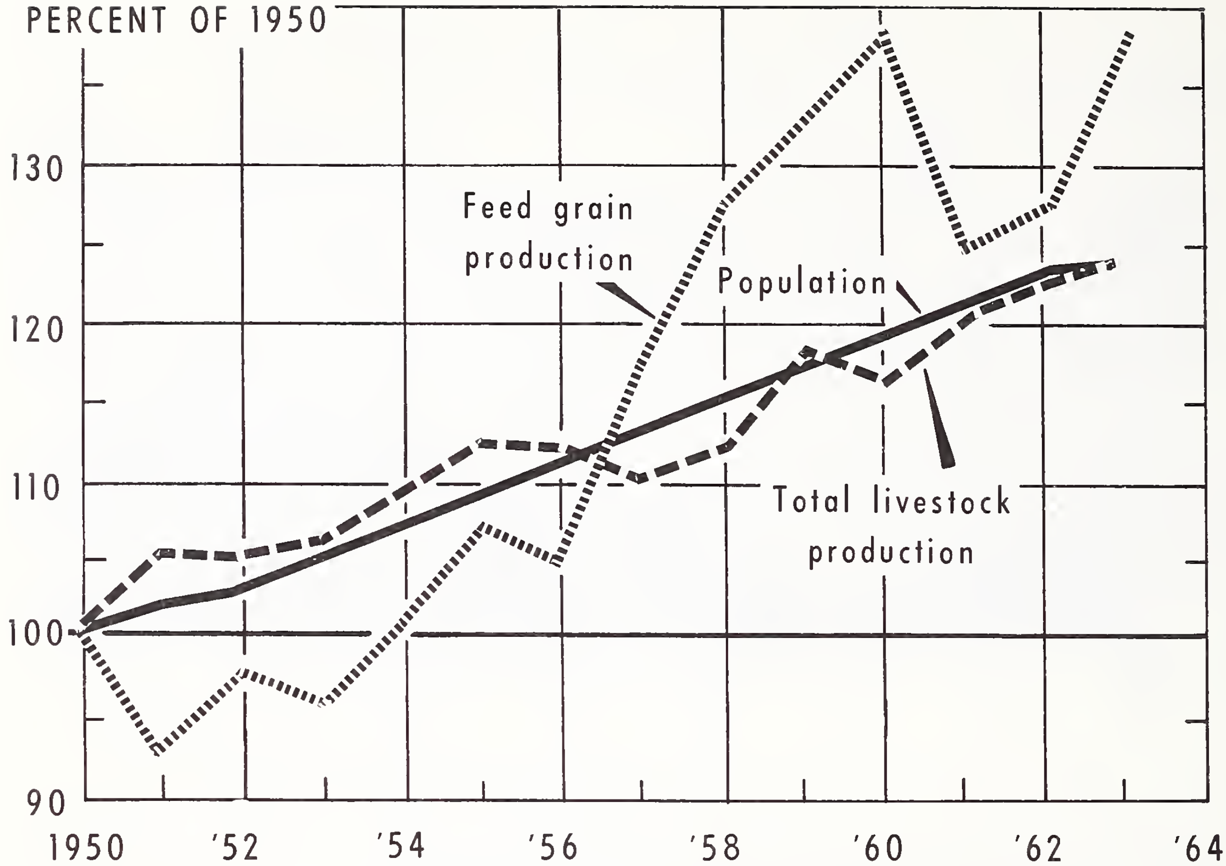

Figure 2. Feed Grain Production, Total Livestock Production, and Population in the United States (U.S. Department of Agriculture Data)

the feed grain sector since 1950? An important part of the explanation is rooted in technological advance.

In economic terms a technological advance is any innovation which reduces the cost of a given unit of output, or increases the production from a given unit of input. It has the longrun effect of shifting the supply schedule (the quantities of a product which will be produced at various prices) to the right. With a given demand schedule, the price level of the commodity will be lowered by this shift. Technological advance has provided the pressure for the production increases in feed grains during the past years, seemingly in defiance of both economic principles and farm programs.

The impact of technology on feed grains is reflected in figures 3, 4, and 5. Several factors have caused the dramatic increase in corn yields of such magnitude as to give a total production increase of 47 percent between 1950 and 1963 in the face of a price decrease of about 28 percent. The adoption of hybrid corn continued to play a role, although a diminishing one, and corn varieties have continued to be improved. An event late in the 1950's with dramatic yield effects was the introduction of hybrid sorghum. Varieties of other crops have also been improved. The quantity of fertilizer and lime applied has increased by over 80 percent since 1950. Undoubtedly the concentration of corn on soils of higher productivity has been a significant factor. The development of irrigation in western areas has also contributed to this increase.

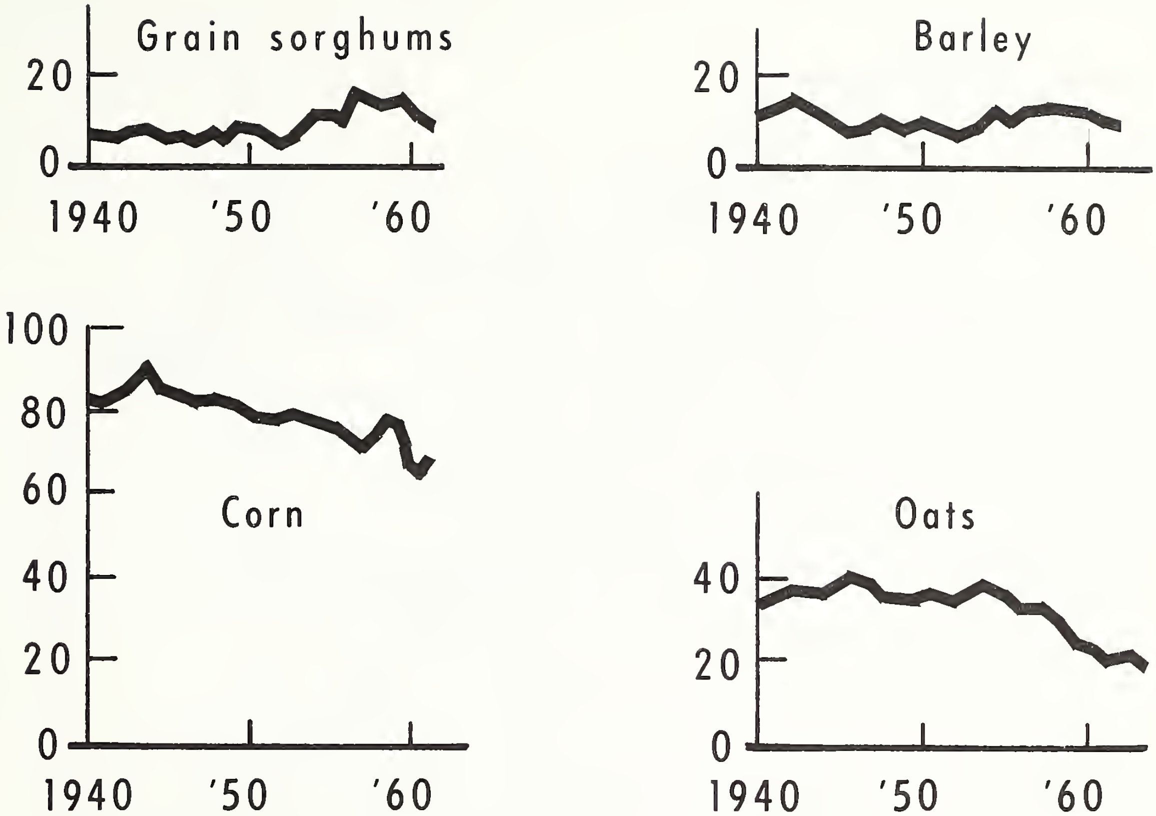

Figure 3. Millions of Acres in Feed Grains in the United States, 1940-1963

Of much interest recently has been the question as to whether recent yield increases were not heavily aided by weather, and therefore of a temporary nature. Not much comfort can be found in this notion.

In addition to the above technologies there have been various types of mechanical innovations in feed grain production, particularly for corn and sorghum. The use of herbicides, insecticides, and the increase in the general managerial competence of farmers have also aided the production of these crops. These developments have probably changed the effects of weather on yields permanently.

Technological advances in the livestock sector, including breeding improvements which give higher feed/meat conversion rates, improved rations and additives, affect the feed grain sector in similar fashion by increasing the meat production potential per acre. The price impacts of these innovations are partially transmitted back to the feed grain sector, conditioned by the demand elasticities for particular livestock products.

There is no evidence that the rate of technological advance in agriculture will abate in the future. Nor would such a turn be desirable as far as the economic welfare of the country is concerned. For the consumer it has meant products of improved quality at lower prices than he would have enjoyed otherwise. For the country as a

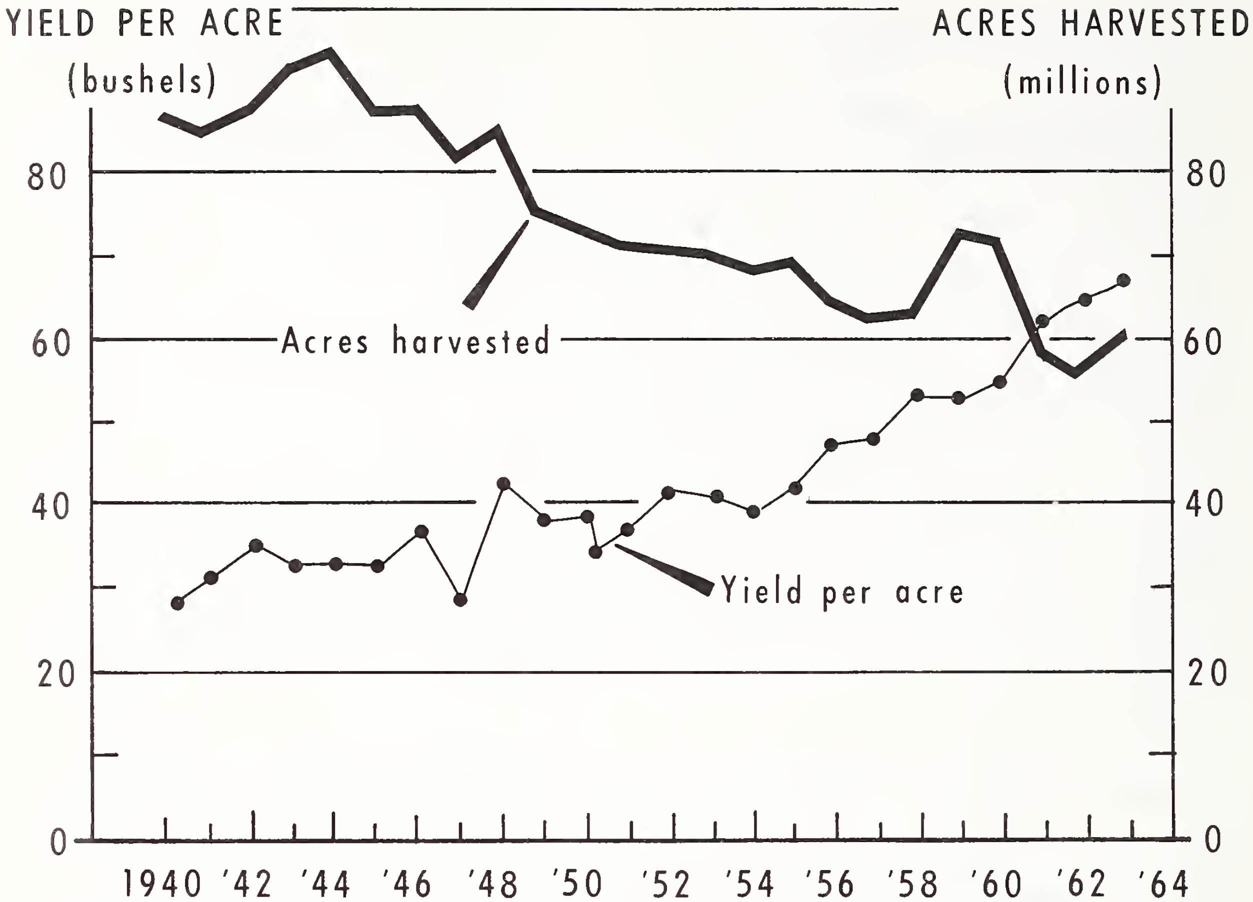

Figure 4. Yield per Acre and Acres Harvested of Corn in the United States, 1940-1963

1940-48 Includes all corn

1949-63 Includes only corn for grain

whole it is an integral part of the process called economic development, making possible the release of resources from the primary production industries for transfer to the secondary and tertiary types of economic activities. For people concerned with agricultural policy it means that programs cannot be static, and that the pressure of supplies will not ease in the near future.

Regional Shifts in Production

Some people suggest that agricultural programs have shifted the production of feed grains between the regions, and in particular that they have shifted corn production out of the Corn Belt. Shepherd found no evidence of such a tendency between 1948 and 1957. 2/ To the contrary during these years corn acreage was tending to concentrate in the Corn Belt. The same tendency was noted for production. A principal supporting factor behind these changes undoubtedly is the proportionately larger increases in the use of nitrogen fertilizer in the Corn Belt, already the heaviest user of nitrogen in 1955.

2/ Geoffrey Shepherd and Allen Richards. Effects of the Federal Programs for Corn and Other Grains on Corn Prices, Feed Grains, Production and Livestock Production. Iowa Agricultural and Home Economics Experiment Station Research Bulletin No. 459. North Central Regional Publication No. 89. August 1958.

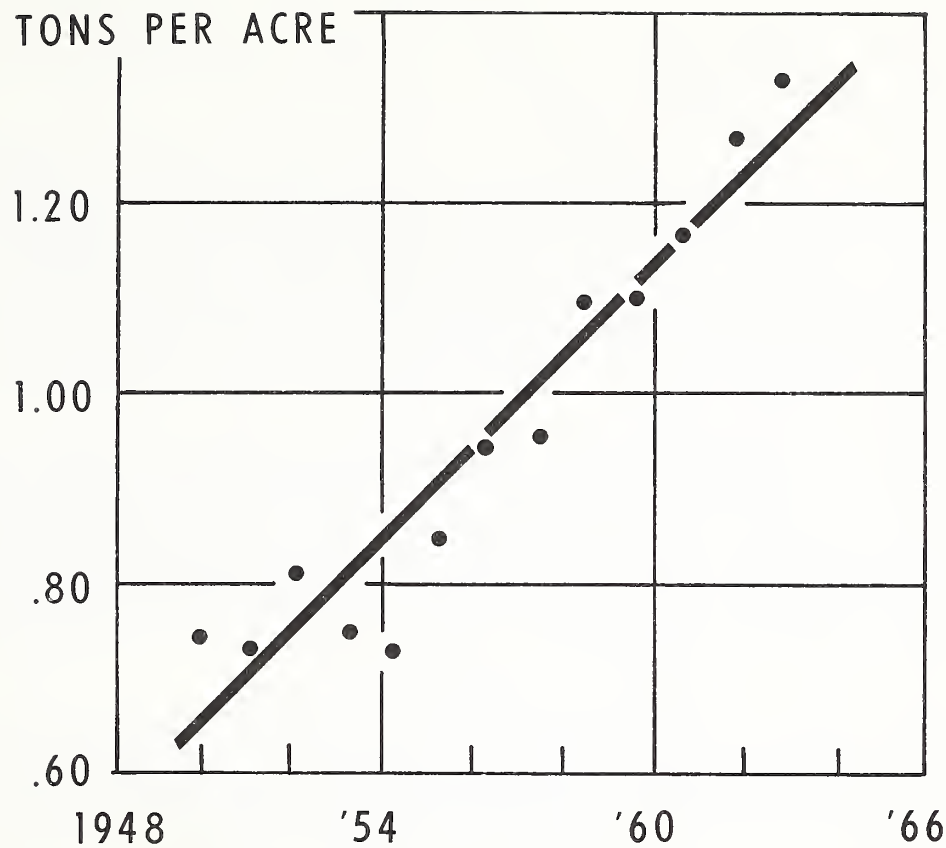

Figure 5. Yield of Feed Grains per Harvested Acre, United States

The Case of Soybeans

Although soybeans are not classed as a feed grain they ought not be omitted from a discussion of feed grains because they compete for land, and in the market as a feed source. The economic story of soybeans during the recent past has apparent elements of success from the policy standpoint. Although the acreage doubled between 1950 and 1962, and the production more than doubled, the market price received by farmers has risen from a low in 1959, and has exceeded the support price since that year. Stocks, including Government stocks, have been variable, but in the past they have shown no single tendency to increase.

Soybeans have benefited from several factors, both domestic and foreign. First, export demands have been strong in both Europe and Japan, resulting in movements of soybeans in 1962 which were five times the level of 1950-54. Second, the quantity consumed by livestock and poultry has doubled in the last 10 years, while total domestic use has more than doubled. In the face of relatively strong demand, the yields of soybeans have increased only modestly, slightly over 10 percent, from 1950 to 1962.

It must be recognized that the demand for soybeans is inelastic, although not quite as inelastic as that for feed grains. The experience with soybeans does not reflect a more rational policy toward the crop, but simply fortunate circumstances. Should the export market lose its bloom or technologies affect yields at a more rapid rate

in the future, soybeans could also be in trouble. These possibilities should not be ignored in policy discussions.

How Large Should Feed Reserves Be?

Carryover stocks are needed to meet unforeseen variations in yields or as a reserve in the event of war. However, the costs associated with storing feed grains restrain the buildup of vast quantities of reserve stocks. Thus, the quantity of carryover is a compromise between the twin goals of economy in storage costs and the accumulation of stocks to meet unknown emergencies. Some have argued that the stocks of 1961 were not an excessive national reserve; others have suggested much lower levels, such as 20 million tons, to minimize storage costs. CCC stocks have varied recently from 9 million tons in 1950 to 75 million tons in 1961; other carryover runs around 10 million tons.

Determination of optimum level of stocks is a compromise based on the cost of storage on the one hand, and the values of stabilization on the other. Shepherd has suggested a variable storage policy related to the size of the total grain supplies. For supplies (defined as production plus carryover), reaching 200 million tons or more he suggests stocks of 35 million tons, including both Government and private carryover. For supplies of less than 200 million tons the carryover would decrease, reaching a minimum level of 5 million tons for supplies of 160 million tons, the level of supplies that existed in 1951. 3/

The Projected Feed Grain Situation

In considering feed grains during the next 10 years we assume no major change in P. L. 480, and in domestic food consumption programs. We also assume no major change in policy direction from the present feed grain program.

Several pieces of literature are available on projected supplies and requirements for agricultural products in the future. The following discussion draws rather heavily on the ideas from a study by Resources for the Future, Inc. 4/

The basic feed grain requirements for the future will be determined largely by the future level of population and income per capita as they affect the demand for meat. Prospective trade occupies a minor role. A factor of even less importance is the use of feed grains for direct consumption.

The population has been increasing at about 1.6 percent per year. By 1970 we may expect, according to U. S. Census Bureau projection series iii, about 209 million people, and about 245 million by 1980. The latter would represent an increase of 36 percent from 180 million in 1960. By 1980 our gross national product may be at 1,100 billions of dollars per year, compared to 504 billion in 1960, an increase of 118 percent. This assumes an increase of 3.8 percent per year, compounded. GNP per worker would thus increase about 49 percent during this period, or about 2 percent per year.

The consumption of meat per person will increase as real income rises. By 1980 there will probably be a 16 percent increase over 1960. Projected growth in population and income would mean a total increase of 58 percent in meat consumption

---

3/ Geoffery Shepherd. How Much Too Large Are the Stocks of Feed Grains. Proceedings of the Iowa State College Feed-Livestock Workshop. CAA Special Report 24, 1959. pp. 53-70.

4/ Hans H. Lansberg, Leonard L. Fischman, and Joseph L. Fisher. Resources in America's Future. Patterns of Requirements and Availabilities, 1960-2000. The Johns Hopkins Press. 1963.

by 1980 when compared to 1960. In table 1 this has been translated into numbers of grain-consuming animal units, which in turn have been translated into feed grains required for nonfood uses. The projected exports of feed grains in table 1 may appear optimistic; however, the level of 17 million tons projected for 1970 had nearly been attained by 1963.

The projected yield of feed grain reflects higher estimated yields of corn than have been previously used for ''medium'' level projections. These corn yields are based on a straight line yield trend between 1950 and 1963. Corn yields rose in nearly a linear manner from 1954 when the yield was about 40 bushels, to the level of over 67 bushels in 1963. At the same time the average weighted yield of the four feed grains per acre increased by 70 percent along a straight trend line during the 1950's. No allowance has been made for increased feeding efficiency in livestock production in table 1.

Assuming the feed grain yields given, the feed needed in 1970 translates into 108 million acres devoted to feed grain production. The contrast between this 108 million acres required in 1970, and the 128 million acres harvested in 1960, or the 107 million acres harvested in 1963, does not support the expansion of feed grain acreage as a policy goal in the 1960's. By 1980 the acreage requirement is 120 million acres, or 8 million less than in 1960, but 13 million acres more than in 1963. These data assume that in 1970 and 1980 production would be equal to consumption, with no change in stocks.

Apparently we will have no difficulty in producing needed feed grains without using more land in the forseeable future. Any significant release of acres to additional feed grain production, or further increases in the rates of technological advance will mean additional supply pressure in the feed grain market despite greater population or more income per person. Or, if present stocks are to be reduced, additional acres presently devoted to production will have to be taken out, or other means used to reduce the quantity of feed produced.

Foreign Trade Prospects

We have assumed that P. L. 480 sales will undoubtedly continue at present levels for sometime. Their magnitude is dependent less upon economic conditions and more upon the political and humanitarian needs of the time. Our concern here is

Table 1.--Projected U. S. feed grain production and consumption, 1960-1980, and associated factors

Item	1960	1970	1980	Percent change 1960-1980
U. S. Population (millions)	180	209	245	36
Gross National Product (billion $)	504	746	1,100	118
GNP Per Capita (1960 $)	2,792	3,322	4,150	49
Acreage Feed Grain Harvested	127.8	108	120	(7)
Yield of Feed Grain 1/ (Tons per harvested acre)	1.22	1.65	1.86	55
Yield of Corn (Bu. per harvested acre)	54.1	75	90	66
Production of Feed Grains (Millions of tons)	155.6	178	223	43
Grain Consuming Animal Units (Millions) 2/	167.6	210	264	58
Consumption of Feed Grains (Million tons)				
Food	10.8	13	15	39
Feed and Seed	122.4	3/148	3/186	52
Exports	12.7	17	22	73
Total	145.9	178	223	53

1/ Based on Landsberg, Fischman and Fisher. Resources in America's Future. Johns Hopkins Press. 1963, p. 973. Medium feed grain yields adjusted for higher yields of corn. 2/ Based on increase in population and 7.8 percent increase in meat consumption per capita by 1970, and 15.9 percent by 1980, compared to 1960. 3/ Based on .704 tons of feed grains per animal unit, the average for 1957-63.

commercial sales, and the field of economically qualified major buyers narrows to two broad markets, Western Europe and Japan.

Prospects Bright But Still Not a Panacea

U. S. coarse grain exports have been steadily rising and have more than tripled since 1955. Exports of feed grains in fiscal 1964 are estimated at 15.6 million metric tons, which comprises about one-half of the world's trade in these commodities. 5/

Rising incomes cause shifts in consumption patterns away from foods from plants and toward livestock products. Thus, the demand for feed grains in Europe and Japan is directly linked with the expanding income levels of these nations. The future looks bright for continued high levels of feed grain exports; but feed grain exports to Europe will probably not grow as rapidly as its livestock industry. Nations of the EEC are also rapidly expanding agricultural production through farm reorganization and the application of modern technology. The grain price level and the common agricultural policy of the EEC is yet to be established and thus makes any forecast of future U. S. exports somewhat hazardous.

Japan, the bright spot on the horizon, imported over 2 million metric tons of feed grains in fiscal 1964. Higher incomes have caused a rapid expansion in Japan's poultry and and hog industry and a correspondingly rapid increase in the imports of feed grains from the United States. Our feed grain exports to Japan during the remainder of the 1960's can be expected to keep pace with Japan's continually expanding livestock production.

The export situation of feed grains is very favorable when contrasted with wheat, but will not be of a magnitude sufficient to solve the problem of excess resources in the feed grain sector.

Past and Present Feed Grain Programs

During the period under consideration (1950 to present) there seems to have been almost universal agreement in the U. S. economy on the following with respect to the agricultural sector:

1) That resources in agriculture should be limited in order that an income transfer is made to the agricultural sector from the other sectors of the economy;

2) That the Federal Government must effect such an income transfer through various programs.

The disagreements that exist among various groups originate chiefly in differing views as to the amount of income to be transferred to agriculture, and the techniques that the Federal Government shall use in effecting such transfers.

Given the generally competitive nature of the agricultural production industry, individual farmers are price takers rather than price makers. Most of the "inputs" involved in agricultural production are fixed or semifixed in the short run. This simply means that in the short run, agricultural land, labor and capital investment items have very limited usefulness in the production of nonagricultural products. Land and invested capital are not useful because they cannot be moved or converted; labor, because of age, educational training, or the general lack of employment opportunities in the economy. Given this fixity of resources in agriculture, the only opportunity for increasing income that the individual farmer sees is to increase production without a proportional increase in inputs. These output-increasing inputs

5/ Foreign Agricultural Service, USDA.

are made available by society in the form of technology (see page13). Given the inelastic nature of the demand for agricultural products (see page12), a situation arises that is chronic in its nature: farmers acting as individuals will increase output, causing incomes in the feed grain sector to fall to levels that are unacceptable to the agricultural sector or to the economy as a whole. Thus, the agricultural industry in general, and the feed grain sector in particular, has been and is presently plagued with excessive resources that do not have the quality of mobility in the short run.

In order for the feed grain sector to receive incomes that are acceptable to most sectors of the economy, the treadmill of "output expansion-price and income reduction" would have to be stopped. This could be done in two general ways: (1) Prevent prices from falling by supporting prices and then storing the resulting expansion of production; or (2) prevent the expansion of output (either by rationing the inputs or by limiting the amount of output that may be marketed). Both of these approaches result in income transfers from the nonagricultural economy to the agricultural sector. Both approaches almost inevitably require Federal governmental programs to implement the desired income transfer. Those who have suggested that farmers should spurn governmental programs and become "free-farmers," while insisting that agricultural incomes will remain high in the absence of governmental income transfer programs, and ignoring the low mobility of agricultural inputs, have offered the feed grain sector the best of two incompatible worlds--high income and unlimited production.

The feed grain programs in force during the 1950's were a combination of the price-supporting and resource-rationing approaches. Basically short run in their outlook, these programs did not attempt to solve the longrun labor mobility problems of agriculture, but concentrated rather on raising incomes by supporting feed grain prices at levels above those that would have existed in the open market. As output expanded, the Government through the Commdity Credit Corporation was forced to remove the additional stocks from the market. During this same period, resource rationing was intensified for a time with such programs as the conservation reserve, acreage reserve and acreage allotments.

In retrospect, an evaluation of these feed grain programs is possible--they were breeders of surplus. Each year during the period 1952-1961 the carryover of feed grain stocks increased (figure 1). Advocates of the price support programs had hoped to prevent the accumulation of vast surplus stocks by various land retirement provisions, but their hopes were not realized for various reasons:

1) Offsetting the control of the land input, which is accountable for about 15-20 percent of total output, production was increased by substituting other productive inputs for land, i. e., superior management, better seeds, higher rates of fertilizer application, better sprays, etc.

2) Increases in the demand for feed grains during the period were not at a rate sufficient to absorb the expansion in production.

3) Other sectors of the agricultural economy such as the grain trade, the transportation industry, farm supply firms, and farm communities all realized monetary benefits from high levels of production and huge carryover stocks; thus they did not lend their political support to programs that would significantly reduce production.

4) The differential in support prices that was offered to farmers who stayed within their acreage allotments and to those who did not was insufficient to attract the vast reductions in acreage necessary to prevent accumulations of stocks. The noncomplier, who did not reduce, and may have increased his feed grain acreage, found that he was able to sell his products in a market that was strengthened by the support operations.

The Agricultural Act of 1958 ended the acreage allotments and attempted to end, or at least reduce, the rate of expansion of feed grain production, by lowering price supports. Once again plans were thwarted because individual farmers operating under conditions of resource fixity expanded corn acreage from 74.5 million acres in 1958 to 84.4 million in 1959, and increased corn production 500 million bushels during the same period. By mid-1959 the feed grain carryover had reached 67.5 million tons; by mid-1960 the carryover had increased to 74.6 million tons. The Administration requested that the conservation reserve be expanded from the 28.6 million acres then under retirement to 60 million acres in an attempt to stem the flow of feed grains. This request, however, was not enacted into law by the Congress. Feed grain stocks reached their all time high--84.7 million tons in 1961.

During this period of increasing feed grain stocks, agriculture received higher incomes than would have prevailed without the price support programs. However, two trouble spots appeared and became intensified: (1) The income transfers made to agriculture did not go wholly to farmers, for much of this transfer of income was absorbed by the marketing sector as storage, and transportation capacity was expanded to accomodate increased stocks, and (2) enthusiasm dwindled for programs that permitted almost unchecked production expansion and rising costs to taxpayers.

These two factors provided the justification and the need for enactment of policies that would reduce surplus stocks and transfer income more directly to the farmers by by-passing the absorptive effect of the marketing system. The Emergency Feed Grain Program of 1961 was the result of the feeling that a change in approach was needed in the feed grain sector.

Advocates of the program hoped that by letting the market price fall, and by making direct payments to farmers who restricted feed grain acreage, the price umbrella that had been held over noncompliers would now be removed. Obviously, payments made directly to farmers would be income transfers undiluted as formerly by the marketing system. Obviously also, the program would only be successful if the payments for reductions in acreage were large enough so that nonproducing feed grains would be more, or equally, profitable than the alternative of continued high production.

Determining the success or failure of the 1961-64 feed grain programs depends upon the goals established. Under the provisions of these programs income has been transferred more directly to farmers than under the price support programs. Carryover stocks have been reduced, a political necessity, from their high of 84.7 million tons in mid-1961 to 63.1 million tons in mid-1963.

Evaluating these same programs from a resource allocation viewpoint, the emergency feed grain programs have some shortcomings. These programs raise income by restricting the land input--an input that has few nonagricultural uses. If resource efficiency is to be the goal of agricultural policy, than a more extensive use of our lands is required. But since the feed grain sector has now too many resources devoted to production, a long-run adjustment program must strive for reductions of the nonland inputs if we are concerned with a more optimum allocation of resources.

''Homesteads in reverse'' has been suggested as a means of reducing the nonland resources by accelerating the rate of transfer of farm workers and their families to other parts of the economy. However, the transfer of limited numbers of workers from agriculture may not reduce the total quantity of production. Capital, land and management may be added to the extent that total production in the feed grain sector might be increased in spite of declining numbers of farm workers and operators.

The Criteria

We assume that a realistic program for the feed grain sector during the remainder of the 1960's should meet the following four criteria: (1) There should be no increase in annual program costs to the Federal Government; (2) agricultural incomes in the feed grain sector should remain at or near present levels, (which implies that food prices will be virtually unchanged); (3) broad political support should be available for the proposed program; (4) current domestic and foreign demand expansion programs should be continued at present levels and merged with any new feed grain policies.

We assume that a proposed feed grain program which lacks any one of these criteria will not be supported by the Congress or by the Executive Branch.

The Alternatives

A. Free market. We are in basic agreement with the conclusions of the CAED and JEC reports concerning the implications of the free market. 6/ Returning feed grains to an unsupported market where no resource is rationed would cause expanded production. Prices received by producers would fall sufficiently to reduce the incomes of farmers by 28-38 percent in a 4-to 5-year period. In addition, the free market approach seems to lack the broad political support that is necessary for enactment of a national feed grain program. The free market would reduce the expenditures of the Department of Agriculture, as well as food prices in the short run. However, as prices in the feed grain sector fell, other governmental agencies would probably experience increased costs in an effort to minimize the consequences of politically unacceptable low incomes.

B. Marketing quotas for feed grains. This alternative would hold prices high by limiting the marketing of feed grains. But since a very high percentage of these grains are fed to animals on the same farm as produced the grain, livestock would also have to be place under marketing quotas by assigning feed grain equivalents to the various types and weights of livestock. If marketing quotas were adopted in the feed grain and livestock sector, Government costs would be reduced as CCC stocks were gradually liquidated and land diversion and retirement payments were ended. Foreign commercial sales would still require some subsidies; consumer prices for feed grain proudcts would remain at about present levels. Economic logic suggests that marketing quotas, though presently lacking wide political support, would permit a more optimal allocation of the resources presently in agriculture than a land control program.

C. Compulsory cropland adjustment. While this alternative would be less costly than a voluntary land retirement program, any feed grain program requiring compulsion does not seem to have broad political support.

In a general sense, the organization of agriculture so that resource allocation is optimum is not a primary goal of present policy. For the remainder of the 1960's it would seem that several goals exist, similar to the criteria established at the beginning of this section. Two broad alternatives are thought to be in general agreement with the criteria. These are: (a) Direct payments which are tied to land diversion and (b) voluntary land retirement.

D. Emergency feed grain program. The present emergency feed grain program uses direct payments that are tied to short-run land diversion to bolster farm income.

6/ (JEC): Economic Policies for Agriculture in the 1960's, 86th Congress 2nd Session Joint Committee Print, U. S. Gov't Printing Office, Washington, D. C. 1960. (CAED): CAED Report 18, Center for Ag. Devel., ISU, Ames, 1963.

We feel that this direct payment program could be made more effective in reducing production and stocks while holding incomes at present levels if certain changes were made. With this goal in mind, the following suggestions are offered in the spirit of hypotheses to be tested against the four criteria.

(1) The land presently under conservation reserve contracts (17.5 million acres in mid-1964) might be signed up for an additional 10 years so as to prevent this acreage from returning to production.

(2) Rather than 1-year diversion payments for feed grain acreage removed from production, the diversion might be for up to 5-year periods with the land placed in long-run conservation uses. Extending the diversion period period for longer than 1 year extends the planning horizon of both policy makers and individual farmers and thus lends some additional stability to feed grain economy.

(3) Reduce the carryover stocks to some acceptable and economic level, such as 35 million tons by:

(a) lowering the loan rate on feed grains and at the same time raise the price support payment to maintain farm income at present levels; (b) empower and require the Secretary of Agriculture to keep open market prices at the reduced loan rates by selling CCC stocks as long as the carryover remains above 35 million tons. With higher price support payments and lower open market prices for feed grains, it could be expected that additional land will be removed from the feed grain economy, thereby reducing production.

(4) The 1965 feed grain program permits the substitution of wheat and feed grain acreage allotments--a worthwhile provision. Past agricultural programs involving acreage allotments have tended to freeze production patterns. But, with changing marketing patterns and the technological revolution occurring in production, resources may become misallocated. By permitting substitution of allotments, the effects of misallocated resources will be reduced.

(5) Require mandatory cross-compliance of all supported crops, modified by the wheat and feed grain substitution provision. Resource allocation and income problems exist in other sectors of agriculture such as wheat, cotton and sugar. To permit one sector to throw its adjustment problems on another sector solves nothing in the long run, if one is concerned with the whole of agriculture.

(5) Permit the Secretary of Agriculture to purchase cropping easements on diverted or retired acres. The purchase of easements are thought to be considerably less costly than a long series of conservation reserve or diversion payments. Farm families receiving a lump sum easement payment might find their mobility improved to the point of leaving agriculture.

E. Voluntary Land Retirement. Considerable research work has been done on the voluntary land retirement as a program to meet the criteria suggested above. 7/

7/ See, for example: Christensen, Raymond P. and Aines, Ronald O. Economic Effects of Acreage Control Programs in the 1950's. U. S. Dept. of Agricultural Economics. Report No. 18, Washington, D. C., 1963; Schnittker, John A. Voluntary Land Retirement. pp. 21-32 in U. S. Congress, Economic Policies for Agriculture in the 1960s, Joint Economic Committee, 86th Congress, 2nd Session, U. S. Government Printing Office, Washington 25, D. C. 1960, and Tweeten, Luther G., Heady, Earl O., and Mayer, Leo V. Farm Program Alternatives. Center for Agricultural and Economic Development. Report No. 18. 1963. pp. 45-57.

In general, such a program would be effectuated through rental contracts made with farmers whereby they would agree to keep specified lands out of the production of cultivated crops for a given length of time. The land might or might not be used for other activities during the diversion period. The program might be available to all farms, for diversion of either part or all of the acres, or it might be available only to certain geographic areas. It might be directed at lands of either high or low productivity. There is no doubt that given sufficiently large programs, enough land could be diverted on a voluntary basis to stabilize production at the present level, or on a level which would reduce stocks at some desired rate.

Among the advantages of such a program would be the avoidance of signing up farmers every year, assuming that the contracts were similar to those of the 10-year Conservation Reserve. Its long-run nature would encourage the movement of some people and capital out of farming, in addition to the land which is held out. A good proportion of these shifts would be permanent, as evidence in the Conservation Reserve program. Some of the land which was seeded down to hay and pasture is being maintained in these uses after the contracts expire; a good share of the people who left their farms as a result of the mobility provided by their Conservation Reserve contracts have found other permanent employment.

Disadvantages of the program can also be suggested. In common with any land-based program, the competition for the remaining land in cultivation is increased; thus driving up land values. Such a program would probably necessitate not only rental payments, but additional subsidies for cover establishment and land maintenance. Farmers will have the incentive to apply increased amounts of labor and capital to their remaining land, partially offsetting the reduction in production from the land which has been diverted. The rental payments required to attract additional acreages will increase as the number of acres already signed up increase. The effects on nonfarm sectors of the farm community, particularly under a whole farm arrangement, are such as to make the proposal unpopular with many nonfarm people in rural communities.

How would the program operate now? We assume that it would be applied on a part-farm rather than whole-farm basis, largely to minimize the objection to the community effects. Also, we assume that the wheat program will remain in its present form. The first step would be the renegotiation of the present Conservation Reserve contracts as they expire. Presently about 17.5 million acres of land remain under contract, compared to 28.4 million acres in 1961, and 24.3 million acres in 1963. Second, the diverted acres under the present Feed Grain program could be brought under contract. In 1963, 24.5 million acres were diverted and for 1964, the figure is 34.3 million. The total diversion in 1964, (land under contract plus emergency feed grain diversion) was about 52 million acres, 3 million more acres than in 1963.

The number of acres which would need to be diverted under a Conservation Reserve program depends upon the productivity of the land taken out. Bottum has suggested 60 million acres as a requirement, when applying the program to both wheat and feed grain acreage.8/ Schnittker estimated in 1960 that a 48-million acre withdrawal program concentrated largely in the Corn Belt would maintain farm prices and incomes in the feed grain-wheat sector at 1959-60 levels. 9/ Tweeten, Heady, and Mayer have analyzed several Conservation Reserve programs. One of these programs would involve 80 million acres which would deplete stocks of the feed grains

---

8/ J. Carroll Bottum. Voluntary Land Retirement. The Farm Problem--What are the Choices. National Committee on Agricultural Policy. The Ohio State University Columbus, Ohio.

9/ Schnittker, *op. cit.*

and wheat from 79.4 million tons to 45 million tons in the 4 years after 1963. 10/ The program is geared to maintain $1.07 corn, $1.18 wheat, and $17.20 hogs during the liquidation period, with the price increasing to considerably higher levels afterward. Again, this program is aimed at the feed grain-wheat economy.

Now let us think only of feed grains. If the present price structure were to be maintained during this decade, a conservation reserve program involving from 50 to 60 million acres would be required. At the end of the decade the 1963 harvested acreage would be about 107 million acres. An additional component would be required if stocks were to be reduced to say, 35 million tons by 1970--perhaps 5 million more acres. If the rental payments amounted to $20 per acre, the diversion cost would amount to 1,100 million dollars per year, assuming 55 million acres diverted. This is not greatly different from the combined cost of the conservation reserve rentals, diversion payments, and price support payment which in 1963 amounted to about 1,142 million dollars.

In addition to the conservation reserve rental, additional funds would be necessary for seeding costs and administration. Also even after stocks were worked down to desired levels a CCC storage program would be required to stabilize supplies.

Several variations in a conservation reserve program have been suggested. Whole farm contracts may reduce the tendency toward more intensive production on remaining acres which has been inherent in the past reserve programs and are less costly to the Government. The impacts on rural communities could be reduced by limiting the amount of land which could be diverted per county.

Another variation which could be made operational in certain areas would be the purchase of longrun easements on the rights to produce cultivated crops. Such easements could run for as long as 99 years and they could be released temporarily at the discretion of the Government in times of national need. The easement program should be considerably cheaper than a 10-year Conservation Reserve program, and it could be supplementary to a conservation reserve program, offered to **farmers** as an alternative.

Another variation to the conservation reserve is land purchase. This would be less costly to the Government than the part, or whole-farm retirement of land programs. However, the administration of scattered tracts might be somewhat complicated. Land would be best purchased in larger blocks, a possibility in western areas, and rented out to farmers for grazing. Undoubtedly the political acceptability of land purchase program might be quite questionable.

Summary and Implications

Feed grain production potential is greater than the quantity demanded at current prices, and through 1980 it would seem that supplies will be ample. The Government has been making income transfers to the feed grain sector, and it is probable that these income transfers will continue. Land restriction programs tend to direct the income transfer payments toward landowners, while marketing quotas tend to shift the income stream toward owners of the marketing rights. Controls on agricultural output, no matter how obtained, will cause underemployment of some of the resources presently committed to agricultural production.

Programs for the feed grain economy that seem to have the widest political support are: some form of the conservation reserve program, or the present emergency feed grain program (direct payments tied to land diversion).

10/ Tweeten, Heady, and Mayer, op. cit. pp. 53-54.

MARKET SITUATIONS AND POLICY ALTERNATIVES FOR WHEAT 1/

Laurel D. Loftsgard and Norbert A. Dorow 2/

Wheat production is big business for U.S. farmers. Nearly one out of every two farmers receives part of his income from wheat. One out of every six crop acres harvested in the U. S. is wheat. It is the major source of farm income in the Plains States and in the Pacific Northwest, where there are relatively few alternative crops. It is a supplementary crop and source of income in other regions producing wheat.

The adjustment problem for wheat farmers is a part of the whole farm problem, namely, the capacity to produce more than the domestic and export markets can absorb at acceptable prices. This aggregate problem has manifested itself in surpluses of certain commodities, such as wheat, because the kind of farm programs used have emphasized price supports for these certain commodities.

Except for a couple years immediately following World War II, total wheat supplies have overrun total demand for wheat since the thirties. This imbalance can be attributed to a combination of four factors: 1) Suitability for large acreages of wheat in the Plains where there are few land use alternatives, 2) acreage allotments coupled with continuing wheat support prices somewhat higher than if competitively priced in the market, 3) technology of production which has more than doubled wheat yields per acre during the last three decades, and, 4) a total demand that has not increased at the same rate as total supply.

Factors Affecting Production

Farmers produce wheat to earn income. The amount of wheat they produce is affected by two economic relationships. One relationship is between selling price and cost of production; the other relationship is between the returns from wheat and from alternative crops.

Price Level, Cost, and Output

By the forces of economics, farm production tends to increase when farm prices increase. Conversely, it tends to decline when prices decline relative to cost. However, these conditions must be qualified when discussing total crop production and particularly so when discussing crop production in the Great Plains area where about two-thirds of the total wheat acres are grown.

By increases in technology, U. S. total crop output per acre has increased 40 percent since 1950. Average corn yield per acre, for example, increased from 40 bushels in 1950 to 55 bushels in 1960, even though average prices received by farmers dropped from $1.50 to $1.00 per bushel during the same time period. A parallel comparison for wheat is difficult because price support programs have kept wheat prices relatively stable. From 1950 to 1960, wheat prices declined from $2.00 to $1.75 per bushel, but average wheat yields per acre increased from about 16 bushels to 24 bushels. Thus, technology is a major factor influencing increase in total crop output, including wheat. It follows that an increase in price or sustained good prices tends to increase output. On the other hand, a decrease in prices does not decrease aggregate output. Instead, it merely slows down the rate of technology adoption and use of inputs so that the rate of increasing output is slowed down. However, individual crops are responsive to relative price changes among crops, and farmers respond to these price changes by shifting resource use to the most profitable crops.

1/ Prepared for the National Agricultural Advisory Commission, August 1964.
2/ Agricultural Economists, North Dakota State University, Fargo.

In the Great Plains, the major wheat producing area, price has even less effect on aggregate crop output because rainfall is a major limiting factor. That is, output per acre is not as greatly affected by intense use of variable resources, like fertilizer, as it is in the more humid regions. In this area, instead, the number of acres in production is of major importance in determining crop output. And it appears that the number of cropland acres drawn into production during and after World War II has reached an economic limit under present price relationships.

One may then ask if wheat acreage would decrease as a result of lower wheat prices. The answer is that a price decrease will slow down the rate of production increase but will not sharply affect output until prolonged periods of adverse prices force a discontinuance of production on low producing land. Reasoning for this statement is supported by analyzing production costs.

A typical wheat farmer incurs two kinds of costs. One kind is fixed costs that include capital cost on land and facilities, taxes, and depreciation on machinery and buildings. These costs are incurred regardless of the amount of production. The other kind is direct cost including seed, fertilizer, chemicals, fuel, repairs, and similar items. These direct costs are about 40 percent of total costs. Accordingly, a farmer can remain in production for a number of years even with considerably lower returns as long as gross returns will cover his direct cost, taxes, and family living. Crop output will be near full production unless he decides to quit farming. If he does quit, his land is taken over by another farmer who usually produces as much or more on the same acreage.

Continued lower income would result in declining land values and, thus, a lowering of annual land costs. Eventually, machinery would have to be replaced. Over a period of time, marginal producing land would tend to move out of crop production.

Returns From Wheat Versus Alternative Crops and Output

When considering market situations and policy alternatives for wheat, it is useful to recognize the major production areas, the relative contribution of each area to total wheat output, the classes of wheat produced, and the economics of shifting resources to alternative crops as wheat prices decline. This information is partially shown in table 1.

Table 1.--Wheat classes, proportion of total wheat production and principal competitive feed grain crop by major wheat producing regions

Item	Regions			
	Northern Plains	Southern Plains	Western	Eastern Corn Belt
Wheat classes	Hard red spring and durum	Hard winter	White	Soft red winter
Percent of total average production (1958-62) 1/	16.4	56.5	12.7	14.4
Percent of total acreage allotment in 1960	27.3	48.3	8.3	16.1
Principal competitive feed grain crop	Barley	Grain sorghum	Barley	Corn

1/ These figures are based on classes of wheat only. Percent of production by regions may vary slightly.

In recent years, wheat has gained in its comparative advantage over feed grains, primarily because feed grain prices have dropped more than have wheat prices which have had better price support programs. During the period 1949-53, U. S. wheat farmers seeded an average of 78 million acres of wheat annually, with 83.4 million in 1949. Under the 1963 price support level of $1.82 per bushel, farmers would seed as many or more acres without acreage restrictions. With acreage allotments, actual total seeding has been around 55 million acres. However, the Northern Plains area has seeded less wheat than its allotment because of unused wheat allotments in conservation reserve and few farms seeding nonallotment wheat under the 15-acre provision. The reverse situation is true for the Southern Plains and Eastern Corn Belt areas where nonallotment plantings under the 15-acre provision exceed the allotments not planted.

The principal economic force to cause a decrease in number of wheat acres is a decline in wheat returns relative to the returns from competitive crops. Also, the competitive crops must be able to absorb a significant acreage shift without seriously depressing the market for this crop.

The comparative yields of wheat and feed grains, direct production costs, returns, and wheat prices that would give the same per acre return to wheat as feed grains are shown by regions in table 2.

In the Northern Plains region, barley is the principal feed grain crop that could be competitive with wheat. With feed barley at $.80 per bushel and if U. S. wheat production were such that feed value established the basic price for wheat, one would expect a sizable increase in wheat acreage, comparable to the acreage during the 1949-53 period. Farmers would shift away from barley toward more wheat production because (1) expected net returns would be somewhat higher than from barley, and (2) wheat is a more certain crop than barley under variable weather conditions. Price premiums for high protein, high quality wheat produced in the area would bring expected returns equal to or higher than the $1.19 break-even price shown in table 2.

Table 2.--Comparative yields, costs, returns, and break-even prices for wheat, by regions

Region	Yield/A. (bu.)	Gross return/A.	Direct costs/A.	Return over direct cost/A.	Break-even price/bu. 1/
Northern Plains					
Wheat	18.5	$37	$10	$27	$1.19
Barley	26.0	21	9	12	
Southern Plains					
Wheat	21.5	40	9	31	1.40
Grain sorghum	32.0	32	11	21	
Western					
Wheat	35.0	63	12	51	.97
Barley	40.6	33	11	22	
Eastern Corn Belt					
Wheat	28.3	52	20	32	1.75
Corn	59.0	59	30	29	

1/ Price of wheat that will give same return per acre as the competitive feed grain crop with prices at about $1.00 per bushel for corn equivalent. Since all average crop yields do not change at the same rate over time, the break-even prices would not remain constant.

The Southern Plains region includes nearly 60 percent of total U. S. wheat acres. The closest competitive crop to wheat in this area is grain sorghum which yields about 1,800 pounds per acre, as compared to 1,300 pounds per acre for wheat.

With grain sorghum priced at $1.00 per bushel, wheat would earn equal returns if priced at $1.40 per bushel. But wheat price may have to drop considerably lower than this to induce a significant shift of crop acres to grain sorghum. Wheat in this area is used extensively as a winter cover crop and for winter grazing and is more adaptable than grain sorghum to large scale operations. Therefore, an intermediate drop in wheat prices would not result in a significant decline in wheat acreage. A wheat price drop in the feed grain equivalent may cause considerable shifting of land and production resources to grain sorghum particularly in the eastern areas with more rainfall.

The Western region, particularly the states of Washington, Oregon, and Idaho, would likely increase their acreage significantly if acreage allotments were lifted and if wheat were priced at its feed grain equivalent. The reason for this response is that these farmers can produce more pounds of wheat per acre than barley, their alternative crop. At the present time, this area produces between 8 and 9 percent of the total U. S. wheat acres.

The Eastern Corn belt includes about 15 percent of the U. S. wheat acres. With corn priced at $1.00 per bushel, wheat has to be priced at $1.80 per bushel to give equal returns. Accordingly, it may seem that even a moderate price drop for wheat would cause these farmers to shift out of wheat production. However, other factors seem to affect land-use decisions. For example, winter wheat fits well into the land-use pattern as a small grain and a nurse crop for legumes, and it aids farmers in the distribution of their labor use.

Thus, in this region where wheat is a minor crop, the cut in wheat acreage as wheat price drops may not be significant until wheat price approaches its feed value.

Estimated U. S. Supply Response

It is difficult to estimate accurately the probable response of wheat output at various price levels. U. S. farmers have seeded wheat under acreage allotments since 1954. Also complicating any projections are the wide fluctuations in yields due to weather and the probable decline in average yields as wheat acreage increases.

With feed grain prices at $1.00 per bushel for corn equivalent and with wheat priced at $1.80 or more per bushel, it is likely that wheat production would expand substantially without any type of Federal production controls, probably to the 75 to 80 million acre level of the late 1940's and early 1950's. A wheat price ranging from $1.40 to $1.80 per bushel would result in slightly less than this high level because of some shift away from wheat in the Corn Belt and fringe wheat areas. If wheat were priced less than $1.40 per bushel, it is estimated that the Corn Belt region would shift much of their wheat acres to corn and the Southern Plains region would begin to replace wheat production with grain sorghum. A 1963 study at the Center for Agricultural and Economic Development indicated that farmers would produce 64 to 66 million acres of wheat with wheat at its feed grain price. Estimated annual production was 1.45 billion bushels through 1967. 3/

If these lower prices continued, some marginal cropland would be idled or used for grazing. But a drop in the returns from wheat, either due to lower prices or a cut in acreage, can have serious economic implications both for the farmers and farm related communities.

3/ CAED Report 18. "Farm Program Alternatives," by Tweeten, Heady, and Mayer, Iowa State University, Ames, Iowa, May 1963.

The following statements summarize the factors affecting production.

1. Wheat production is dependent on price relative to production cost, but more important is the comparative return between wheat and feed grains in the wheat producing areas.

2. Total crop output does not respond to decreased crop returns in the short run because of the high proportion of fixed costs and the lack of alternative economic uses of fixed resources such as land, labor, and machinery.

3. If economic forces only are used to bring about an adjustment in wheat acres to avoid surpluses, wheat price would tend toward its value as a feed grain.

Factors Affecting Demand

Demand for a product is defined as the various quantities that consumers will use at all possible alternative prices in a given period of time, other things being equal.

Wheat has several possible market demands: 1) Human food in the United States, 2) human consumption in other countries, 3) livestock feed, and 4) industrial uses. Under past prices, wheat has been priced out of the feed grain market and less than 100,000 bushels are used annually for industrial purposes. Accordingly, the two principal market demands have been for domestic consumption and for export.

Table 3 shows the total supply and disappearance of U. S. wheat for the years 1952 to 1964. Domestic disappearance includes not only wheat used for food but also for feed, seed, and industrial purposes.

Table 3.--Wheat: Supply and disappearance, U. S., 1952-64 1/

Year beginning July 2/	Supply			Disappearance		
	Carry-over	Production	Imports	Domestic	Exports	Total
	Million bushels	Million bushels	Million bushels	Million bushels	Million bushels	Million bushels
1952	256.0	1,306.4	21.6	660.7	317.8	978.5
1953	605.5	1,173.1	5.5	633.6	217.0	850.6
1954	933.5	983.9	4.2	611.0	274.4	885.4
1955	1,036.2	937.1	9.9	603.4	346.3	949.7
1956	1,033.5	1,005.4	7.8	588.4	549.5	1,137.9
1957	908.8	955.7	10.9	591.1	402.9	994.0
1958	881.4	1,457.4	7.8	608.2	443.3	1,051.5
1959	1,295.1	1,121.1	7.4	599.9	510.2	1,110.1
1960	1,313.5	1,357.3	8.2	605.9	661.9	1,267.8
1961	1,411.2	1,234.7	5.9	610.0	719.9	1,329.9
1962	1,321.9	1,093.7	5.5	583.9	642.3	1,226.2
1963 3/	1,195.0	1,138.0	5.0	578.0	860.0	1,438.0
1964 4/	900.0	1,275.0	5.0	635.0	675.0	1,310.0

1/ Wheat Situation Reports. Economic Research Service, USDA. 2/ For marketing year from July of given year through June of following year. 3/ Preliminary. 4/ Projected.

Domestic Demand

The domestic demand for wheat has remained almost constant at about 600 million bushels per year for over 30 years. As population increased, consumption per capita decreased. As consumers' income increased, they spent an increasing proportion of their income for meat, fruits, and vegetables, and a decreasing proportion of their income for wheat products such as bread and cereals.

Since annual U. S. production is more than double domestic use, the domestic demand for wheat is not effective in determining price except as it affects the development of public wheat policies. That is, the price support level of wheat has little effect on the domestic consumption of wheat products. For example, a wheat price change of a dollar per bushel would affect the price of bread by 1 to 2 cents per loaf of bread.

Export Demand

Exports are a major outlet for U. S. wheat. With inclusion of the Food for Peace program, over 50 percent of normal wheat disappearance is exported. The dollar export demand for U. S. wheat is governed by available foreign markets for U. S. wheat at trade prices established under the International Wheat Agreement.

The majority of wheat producing countries have some kind of price support program to protect their own farmers. With most countries operating under administered markets, the International Wheat Agreement has been used for a number of years to prevent "price wars" and stabilize a so-called world price for wheat.

Exports under P. L. 480 comprise a major part of U. S. wheat movements to foreign countries. In the 1961-62 marketing year, for example, 75 percent of our wheat exports were under this aid program to underdeveloped countries.

At the present time, the nutritional deficiency of people in underdeveloped countries is equivalent to a billion bushels of wheat. It is projected that world population will double by the year 2000. Although it appears that our Food for Peace program is presently doing about all it can without reducing our own commercial sales and cutting into markets of friendly countries, future world food needs should be considered in developing trade and foreign aid programs, as well as U. S. economic policy and public farm programs.

Classes of Wheat

The wheat adjustment situation applies to all wheat. Yet each class of wheat has its own supply and demand situation. The average annual production and use of each class of wheat are shown for the 3-year period 1960-62 in table 4.

For this 3-year period shown in table 4, total average use of all wheat is less than total average production which resulted in a decrease of carry-over stocks during this period. Use exceeded production in all classes except durum. High yields and increased durum acreage in 1962 boosted output to 70 million bushels for the year. A closer examination of table 4 shows that hard red spring and durum classes were exported primarily for dollars, with soft red winter also having strong dollar sales. White wheat and hard red winter wheat exports moved primarily under P. L. 480.

The 1963-64 market year is not included in these averages because of the abnormally high exports to Russia and other Communist bloc countries. These expanded exports were largely commercial exports.

Table 4.--Average annual production and disappearance of classes of wheat, 3-year average-1960-62 (Market year ending June 30, 1963)

Wheat class	Average annual production	Domestic use	Exports		Total use
			Total	Percent commercial 1/	
	Million bushels	Million bushels	Million bushels	Million bushels	Million bushels
Hard red winter	695	266	450	19.6	716
Hard red spring	160	136	38	77.0	174
Durum	42	24	9	100.0	33
Soft red winter	183	135	50	64.3	185
White	149	41	126	36.6	167
Total	1,229	602	673	30.5	1,275

1/ Sales for dollars assisted by Government subsidy payments. Remainder of exports were under Government financed programs, primarily P. L. 480. These percentage estimates are based on wheat grain exports. Similar data on flour exports by wheat classes were not available.

While there can be considerable substitution between wheat classes, all classes of wheat cannot be used to make all kinds of wheat foods. Under present levels of domestic use and dollar and P. L. 480 exports, stocks of some classes of wheat are almost depleted. A closer recognition of the supply-demand relationships by classes of wheat should be included in future public farm programs.

Summary statements of factors affecting demand for wheat are as follows:

1. If the price of wheat were at or near its value as feed, the wheat industry with no acreage allotments would still tend to produce more wheat than would be normally used for domestic food and exports at recent levels.

2. Industrial use of wheat would be a very minor additional demand even at feed price.

3. Under no-support prices, the lowest value use would establish the basic wheat price. (That is, if supply is greater than domestic use, export price would establish the basic price.) If supply is greater than domestic use plus exports, the feed value price would establish the basic price.

4. Domestic price differentials and proportion of exports for dollars between classes of wheat indicate the differences in total commercial demand for each class of wheat.

Wheat Program Alternatives

Historically and currently a variety of public wheat policies and programs have been proposed for alleviating the wheat problem. Identification of the major problems varies between individuals and between groups; therefore, the proposed

programs also have varied in their approach to solving the problem. The wheat problem and wheat programs are not isolated from the general farm problem or from nonfarm problems of the economy.

Farmers and nonfarmers are concerned about the directions of farm and wheat policies for the future. These public policies may affect a variety of factors, including: Returns to farm resources, freedom of decision making by farmers, economic adjustments in farm and farm dependent communities, cost of food, agricultural trade, and public cost of these programs.

Farm and wheat policy proposals may be evaluated by several criteria:

1. Effect on level and stability of farm income, in general and for wheat producers.

2. Effect on alleviating the basic problem, excess resources in agriculture and wheat production.

3. Adaptability to economic production adjustments between farms and between regions.

4. Level of interference with the pricing mechanism and its operation in allocation of resources to meet consumer demands.

5. Effect on economic and social institutions of rural communities.

6. Effect on food prices.

7. Level of Federal treasury costs.

8. Effect on world trade and foreign policy.

9. Political acceptability.

An ideal wheat policy might include a program which will contribute towards limiting output, maintain or improve wheat producers' returns to resources, aid in adjusting farm resource use, be adaptable to changing economic conditions, and contribute to foreign trade. This is to be accomplished at a minimum of public treasury cost without raising food prices or without causing economic hardship on any particular rural group or segment of the economy.

As it is improbable that one program can accomplish all these objectives, an acceptable wheat program should accomplish those objectives which have highest priority among the publics concerned.

If farmers had a choice they might prefer the 1963 type program. This maintained the historical allotments at the 55 million acre level with voluntary diversion with payments for reducing production. Prices were also at historical levels. But the high public cost of this program apparently precludes its return.

In this setting two alternative programs with possible variations are discussed. One is basically a comprehensive conservation reserve type program for wheat and feed grains. The other is a multiple-price program with many similarities to the 1964-65 wheat program now in effect.

Conservation Reserve Type Program

A conservation reserve type of program is aimed at retiring part of the land resources, diverting capital resources to nonfarm production, and shifting labor from farming to other endeavors.

A comprehensive conservation reserve program might include various methods for diverting farm resources. Basically it implies rental of farmland by the Federal Government. The methods and allocation of effort will depend on the objectives.

Past and present wheat programs have treated wheat as a separate commodity from other grains. Prices and returns from wheat have been considerably higher than from competing crops in the major wheat areas. Therefore, it has been necessary to have "wheat" programs including acreage allotments and export subsidies, and to continually develop new "wheat" legislation to meet changing situations.

A conservation reserve program can encompass most of the agricultural grain crops, particularly feed grains, wheat, and the principal oil crops. This proposal is considered as a comprehensive program for all these crops. The effects on the wheat production and income will be emphasized in the discussion.

This proposal includes three phases; all phases are dependent on voluntary participation:

1. Whole farm retirement is the major phase. In this program the Federal Government would rent whole farms under contracts for 5 or more years, depending on the specific objectives for the area. The principal advantages of whole farm retirement are that the capital and labor are also diverted out of agriculture, and a given amount of land and potential production can be diverted at a lower cost than under partial farm retirement.

2. A partial farm retirement program, a minor phase, would be a supplement to the whole farm diversion action. It would make the program more flexible to aid in adjusting to variations in yields or to unexpected large changes in market demands. It would be administered similarly to the 1964 Feed Grain program.

3. Land diversion to less intensive use, rather than to nonuse, would be a provision of this program. This would be on a selective basis for specific objectives. An example would be diverting cropland to grazing land on a cattle ranch. For whole farms it might include consolidating small inefficient farms into larger units for forestry, grazing, etc.

The objective of this comprehensive program would be to retire or divert enough land and, with it, capital and labor resources so that aggregate farm output would be restricted. The scale of the program would depend on the level of prices considered desirable to be maintained by public policy. It has been estimated by various researchers that 55 to 80 million crop acres would need to be diverted in order to maintain a feed grain price level of \$1.00 to \$1.10 per bushel for corn equivalent. The particular methods used for diverting land would affect the level of acreage to be diverted.

Consequences of the Conservation Reserve Program

The political acceptability of a farm and wheat program depends on its effects on the various segments of the public concerned. Its effect on farm resource adjustments, farm prices and income, Government costs, food prices, foreign trade, rural community adjustments, or other factors in the economy should be considered.

Resource adjustments and wheat prices.--Under a conservation reserve program, there would be no acreage allotments for wheat or other grain crops. Farmers would have freedom of decision making in use of their resources.

Each of approximately 3 million farmers, including 1.5 million growing wheat, would use his land and other productive resources to raise that combination of crops which he thinks will be most profitable. His predictions on prices and net returns for alternative crops would affect his decision.

As indicated in earlier discussion the comparative advantage of wheat in the major wheat producing areas is such that, even with wheat at its feed grain price, U. S. farmers would plant about 65 million acres of wheat with an average annual output of 1.4 to 1.5 billion bushels.

With an annual production of 1.4 to 1.5 billion bushels of wheat and the current normal annual disappearance of 1.3 billion bushels, the supply would clear the market at the feed grain price (about 10 cents per bushel above corn equivalent). With differences in classes, qualities, and uses of wheat, some classes and/or qualities would sell somewhat above the feed value price.

However, a significant expansion of exports or decrease in output could mean instead that the export price would be the market clearing price because total supply would be less than domestic use plus exports. At the present level of wheat export prices this would mean $1.35 to $1.45 per bushel as an average farm price.

If the expanded conservation reserve program were aimed at concentrated land diversion in fringe wheat areas, the average annual supply may balance with the expected normal domestic and export demands.

It is assumed that the Commodity Credit Corporation will continue to stabilize supply and prices between years of variable output due to weather. Thus, wheat prices would be supported either near the feed grain price or near the export price, depending on the expected annual supply and disappearance.

This program could be administered to promote the type of land resource adjustment deemed desirable as a public policy.

Farm income.--Farm income to wheat producers in the major wheat producing areas would be significantly lower than under past and present wheat programs; although farm income in the major feed grain producing areas would be maintained near its present level. However, possible future expansion of exports could maintain wheat prices at the world trade level, thus offsetting part of this income drop. Also, long-run adjustments in livestock production in major wheat areas are difficult to predict.

Past wheat programs have maintained the price of wheat, by price supports, considerably above the price at which the supplies would have cleared the market. This price for the domestic share was passed on to the consumer. Export subsidies were used to make U. S. exporters competitive in the export market.

The 1964-65 wheat program resulted in a much lower market price; however, a major portion of the lower price is made up with certificate payments to program cooperators with the objective of maintaining wheat income near its past level.

Under this conservation reserve program, the decline in farm income would be concentrated in the Great Plains and the Northwest, the two major wheat producing areas in which wheat is the principal source of farm income. If the basic wheat price dropped to its feed value price, annual farm income would decrease $400 million to $500 million.

An income payment plan, somewhat similar to the wheat certificate program, could be added to the conservation reserve program. Such a plan is discussed later in this section.

Government costs.--The Federal Government's costs for a comprehensive conservation reserve program for wheat and feed grains would be considerably lower than for the 1964-65 feed grain and wheat programs. Tweeten, et al 4/, estimated the annual cost for a similar program at $700 to $900 million compared to over $2 billion for the 1963 type programs. A supplementary partial farm retirement program to increase its flexibility would increase the costs somewhat.

A land retirement program aimed at whole farms would entail lower public costs than a program diverting a minor portion of the acres on all farms. Under a whole farm program rental payments need to equal normal cash rental income. With a program aimed at diverting a portion of each farm the capital and labor resources remain on the farm; therefore, the rental payments need to equal expected gross returns above direct production costs.

Food prices.--Prices for wheat products should be only slightly lower than at present. The cost of the wheat in the processed consumer product is such a minor part of total cost that any price change would hardly be noticeable.

Foreign trade.--It is assumed that U.S. public policy would dictate continuation of our participation in the International Wheat Agreement. Thus a lower price may not have a significant impact on wheat exports. Under the present 1964-65 wheat program, market prices are somewhat below export prices. The program provides for exporters purchasing 25 cents per bushel certificates to prevent them from under selling and lowering the normal world export price.

Under the proposed conservation reserve program, there should be some method for preventing commercial exporters from breaking world export prices, assuming that average annual wheat production would be greater than normal domestic use plus estimated exports.

Continuation of the proposed program over a period of time would bring about adjustments between classes of wheat according to comparative advantage and demand for these wheats. Price support and export marketing policies could be developed to be more adaptable to these levels of production and the foreign demands for the different classes of wheat.

Effect on rural communities.--Where wheat is produced there are farm people and also towns servicing these communities with farm marketing and supply firms, shopping centers, schools, and other social institutions.

An expanded conservation reserve, which may tend to be concentrated in some communities, will have a negative impact on these towns. As it is a voluntary program for farmers, supposedly they will make a choice to their economic and social advantage. However, the affected towns will not have a choice but will be exposed to declining economic activity.

A guide for an acceptable public policy might be that some should not be worse off at the expense of others. In this case, the program will need to include provisions (including funds) for helping this nonfarm rural sector to adjust to the changes.

4/ Ibid.

Program supplement to aid wheat farmers' income.--It was indicated earlier that this program would mean lower income to wheat farmers even though aggregate farm income is maintained. An income payment program could be added to overcome the major part of this decrease.

The prices and returns under past public wheat programs have been capitalized into land values; therefore, general public policy for alleviating possible capital loss would mean some form of income compensation.

A multiple price plan as used under 1964-65 program or other direct payment plans could be adopted. The source of these needed funds might be the Federal Treasury or it could be transferred through millers and exporters as under the 1964-65 certificate-type plan.

The income payment would be based on historical production and would not require wheat production to qualify for these income payments. A farmer might have the right to "cash in" his marketing quota income at its "present" value, thus terminating payments.

The policy should establish a terminal point, perhaps with a graduated declining level for 10 or 15 years.

On many farms wheat is a minor crop. Over 1 million wheat producers have been raising 15 acres or less. In the Corn belt wheat production had little, if any, effect on land prices. A formula could be developed for limiting payments to major wheat areas in which past wheat prices have been capitalized into land values and other investment.

Multiple Price Program

As a public farm policy it may be considered desirable to maintain a separate wheat program. This has been the policy in the past in order to insure wheat farmers income. The major wheat producing areas have unique problems and interests somewhat different from the Corn belt, the principal feed grain area. Therefore, the wheat "public" may want a program apart from the feed grain "public."

A multiple price program for wheat is economically feasible because there are three possible distinct markets for wheat, namely, domestic food use, the export market, and the livestock feed market at competitive prices.

The domestic food demand for wheat is highly inelastic. This means that whether wheat sells for $1, $2, or $3 per bushel, the quantity consumed by the U.S. public as processed foods essentially will be unchanged.

U. S. wheat can be sold in world trade separate and at different prices from our domestic markets. This is facilitated by our policy on limiting imports.

The feed market is a potential outlet for wheat if priced competitively with feed grains. Wheat for feed would be only a small part of aggregate feed grain supplies, therefore, feed price for wheat would be determined by the price of other feed grains.

A voluntary participation program for wheat is administratively feasible if the basic market price for wheat is at its feed value price. Thus, any production over normal domestic use and exports could end up on the feed market rather than in increased CCC stocks with no market outlet.

Historic acreage allotments appear to be the politically acceptable basis for participation in a wheat program which provides for income above the market level.

Also, it can be justified because high returns under previous public wheat programs have been capitalized into land values.

The program can be operable whether or not there is a feed grain program adaptable to all farms. However, if there is a feed grain program the wheat program can be more flexible by treating wheat as a feed grain. Thus, farmers can substitute wheat for feed grains or feed grains for wheat as is permitted under the present wheat program for 1965.

The basic premise of this program is that there is a need for restriction on potential surplus production of wheat and also feed grains. The program would provide for multiple prices, which means added income to participating farmers for diverting crop acres to nonproduction.

The higher prices for domestic food and export shares of the market can be facilitated by wheat certificates. This procedure is now in operation under the present wheat program. The price level for the domestic food use share is a matter of decision for policy makers. The normal price range would have little effect on the price of bread or cereal products.

The certificate value for the export market needs to be at a rate that will at least make up the difference between the open market price and the export price.

The administrative details of this program can be developed within this general framework. Many features might be similar to the present 1964-65 wheat program.

Consequences of This Multiple-Price Wheat Program

The particular policy goals will determine whether or not this program can be effective. The probable consequences are discussed briefly.

Economic resource adjustments.--A program tied to historic wheat allotments will tend to maintain the status quo in resource use. Therefore, this wheat program will not encourage adjustment of land, capital and labor resources to their most economic use. This program adapted to a feed grain program with land diverting features could be implemented to allow for adjusting crop production between farms and between regions. However, the basic problem of too many resources remaining in agriculture will not be alleviated.

Wheat prices and farm income.--It is assumed that the basic market price of wheat will be at its feed value price to make the program operable over a number of years. Therefore, the type of concurrent feed grain program will affect this price.

If it is assumed that the present feed grain price will be maintained, this wheat program will stabilize wheat income at a level approximating that under the present wheat program. The level is variable, depending on the value affixed to the wheat certificates.

Government costs.--Costs to the Federal Government will be much lower than under the wheat programs in operation preceding 1964. Export subsidies will be reduced, storage costs or surplus stocks will be reduced, and diversion payments for wheat acres, specifically, can be eliminated. Total costs will be comparable to those under the 1964-65 program.

In a program tied closely to feed grains, the major public costs will probably be incurred in the feed grain phase, particularly if it is a voluntary program.

Food prices.--The value attached to domestic wheat certificates will determine whether or not there will be any effect on food prices.

Foreign trade.--This program will not change the present policy and methods of marketing export wheat.

Effect on rural communities.--As this program will tend to maintain the status quo in wheat production, it also will minimize the need for economic and social adjustments in the towns dependent on farm business. The present trends toward fewer and larger farms will continue and will have their negative impacts on these communities.

COTTON: INDUSTRY TRENDS, STRUCTURE AND POLICY ALTERNATIVES 1/

Leo V. Blakley and James S. Plaxico

Perhaps most would agree that public price policy should be designed to achieve a given income goal for producers at a minimum cost to consumers and the public and with minimum restraint on production and marketing decisions. Further, there are persuasive arguments for a long-term consistent policy which would minimize uncertainty surrounding investment decisions of production, marketing, and manufacturing firms. Yet there must be sufficient flexibility in programs to accommodate inevitable changes in the economic and technical conditions surrounding production, marketing, and manufacturing.

Although there are various views as to long-term income targets for the cotton producing industry, there appears to be rather general agreement that large year-to-year income changes for producers are unwise and unacceptable. If long-run goals are to be substantially different from current levels, the adjustment must be accomplished gradually. In any event, programs should be constructed so as to permit such adjustments.

Numerous cotton industry spokesmen have expressed concern for the competitive position of cotton in domestic and world fiber markets. Thus, improvement of cotton's competitive position would appear to be a major goal of cotton policy. In addition, there appears to be considerable interest on the part of producing, marketing, processing, and public groups in reducing CCC stocks in the years ahead. It appears that many individuals and groups prefer a program that would transfer income to producers in such a way as to avoid further capitalization of benefits into land prices.

In this paper we review basic trends in production and consumption which have relevance for cotton price policy, discuss the economic parameters important in the structure of fiber markets, and evaluate certain alternative plans which might be employed for cotton. The treatment of a topic of this breadth and scope in such a brief paper necessarily will be quite selective. Not all plans nor all variations of plans currently proposed will be considered. However, it is our hope that this paper will provide a basic framework for policy considerations.

The Supply of Cotton

Acreage

Acreage planted to cotton in the U.S. increased about one-third in the 1920's as compared with the previous decade (figure 1). However, the 10 million acre plow-up in 1933, and subsequent acreage restriction programs, resulted in more than a 50-percent decrease in acreage planted by the mid-1940's. The removal of acreage restrictions in the late 1940's and early 1950's resulted in an increase in acres planted, but further declines followed the reimposition of acreage controls in 1954. The most recent acreage planted is about one-third the average for the 1925-29 period.

1/ Oklahoma Agricultural Experiment Station Journal Manuscript No. 1093. This paper was prepared in August 1964 at the invitation of the National Agricultural Advisory Committee.

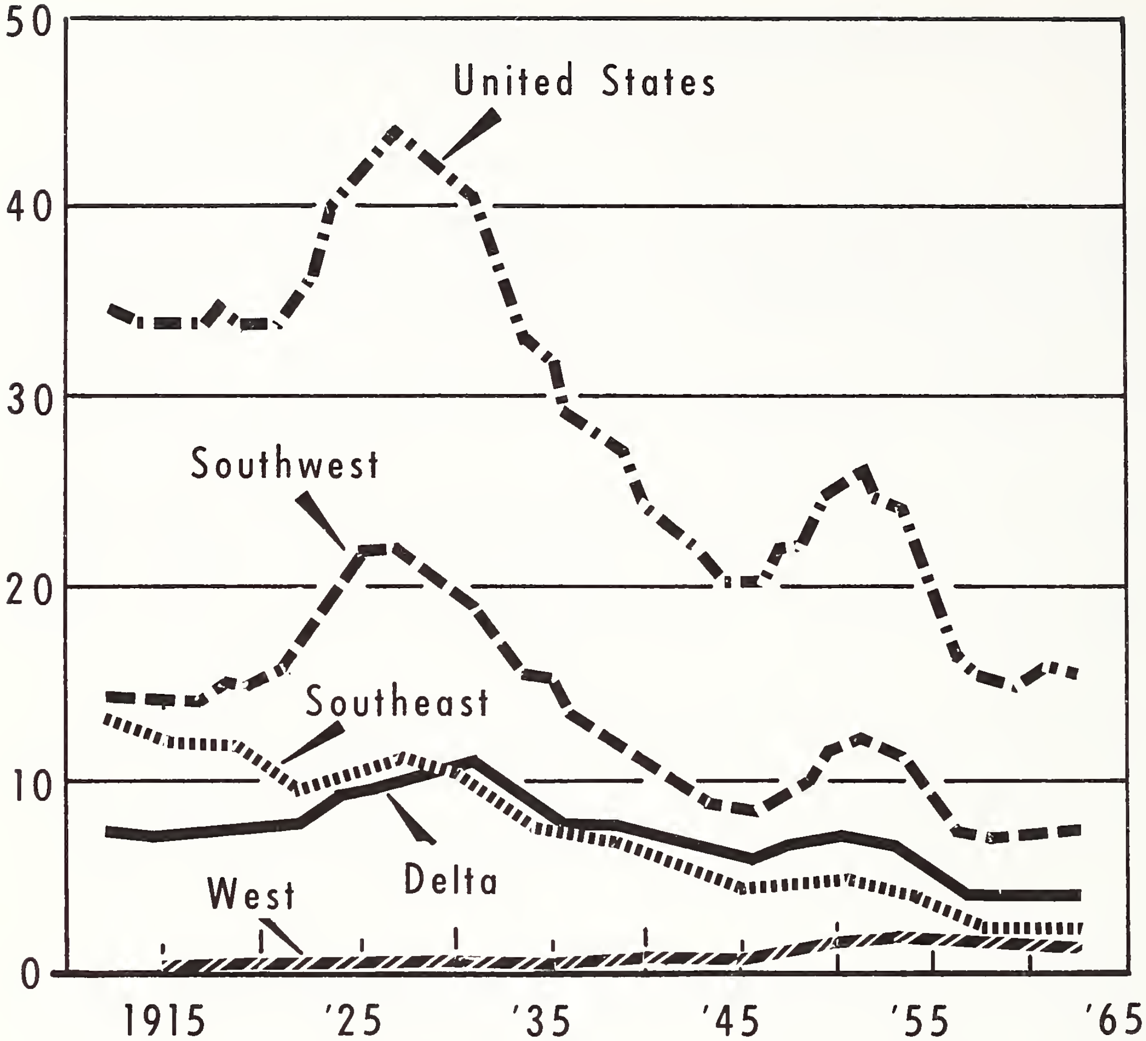

Figure 1. Planted Acres of Cotton, United States and Regions, 5-Year Moving Averages, 1912-1962

Substantial changes in acres planted to cotton in the U.S. have been accompanied by significant shifts between the different production areas. In terms of the percent of acres planted by regions, the Southwest area increased during the decade of the 1920's, declined from the mid-1920's to the mid-1940's, and since that time has tended to increase. The Southeast area has declined relative to the U. S. for essentially the entire period. On the other hand, the West has increased in importance over this period. The Delta region increased as a percentage of the U.S. until the mid-1940's and has declined somewhat since that time.

Production

In spite of large decreases in acres planted, cotton production has been remarkably stable during the past 30 years. Improved production technology and a shift of acres from lower yielding to higher yielding units on a regional, state, and individual farm basis have made this possible. The most recent 5-year average cotton production was down only 15 percent from the 1925-29 period, while acreage was down 66 percent.

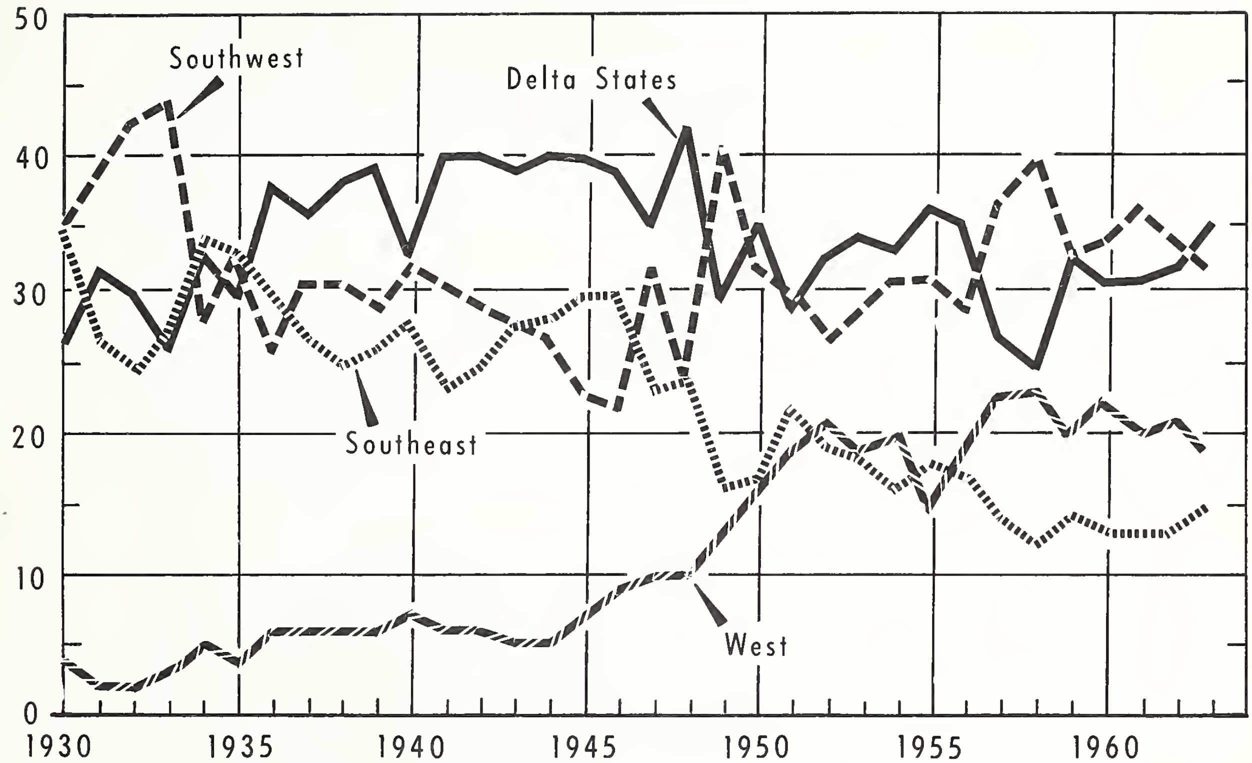

Figure 2. Percentage Distribution of Cotton Production by Regions, United States, 1930-1963

As was the case with respect to acres planted, there have been important shifts in the percent of the U.S. crop produced in the various geographic areas (figure 2). Over the period 1930-63, the crop in the West as a percent of the U.S. has increased from less than 5 to approximately 20 percent. On the other hand, production in the Southeast has declined from approximately 30 percent to less than 15 percent in recent years. The Southwest crop has been relatively stable at about one-third of the Nation's crop, the same as for the Delta.

Size Distribution of Producing Units

Data from the Agricultural Stabilization and Conservation Service indicate that cotton was planted on 492,412 farms in 1963. Of these, almost 75 percent had allotments of less than 30 acres after the release and reapportionment program (table 1). Yet these 75 percent of the producers, with less than 30 acres of cotton, planted less than 25 percent of the cotton acreage in 1963 (table 2). These data suggest that small producers predominate in terms of numbers, but that large producers predominate in terms of acres planted.

Table 1. Percentage of Farms Planting Upland Cotton, by States and Size of Effective Allotments,[1/] 1963.

State	Number of Farms	0.1-4.9 Acres	5.0-10.0 Acres	10.1-14.9 Acres	15.0-29.9 Acres	30.0-49.9 Acres	50.0-99.9 Acres	100.0-199.9 Acres	200.0-349.9 Acres	350.0-499.9 Acres	500.0-999.9 Acres	1000 and Over Acres
Alabama	62,448	28.9	34.1	13.7	14.5	4.7	2.7	1.0	0.3	0.1	*	*
Arizona	3,244	4.5	9.3	9.7	17.7	13.5	17.7	14.4	8.0	2.3	2.2	0.7
Arkansas	34,704	11.7	22.8	16.8	23.7	10.0	7.9	4.2	1.7	0.6	0.5	0.1
California	10,408	5.7	12.6	17.6	21.3	13.5	14.4	8.8	3.4	1.0	1.1	0.6
Florida	2,664	38.6	32.1	11.4	12.2	3.3	1.7	0.6	0.1	*	--	--
Georgia	34,624	17.4	28.3	15.4	22.4	8.9	5.4	1.8	0.3	0.1	*	--
Illinois	148	37.2	27.7	9.5	12.8	7.4	2.0	2.0	1.4	--	--	--
Kansas	1	100.0	--	--	--	--	--	--	--	--	--	--
Kentucky	364	36.8	23.1	8.2	15.1	8.5	5.8	2.2	0.3	--	--	--
Louisiana	20,133	14.6	29.4	15.7	21.2	8.3	5.9	3.1	1.3	0.3	0.2	*
Mississippi	55,099	23.2	30.3	14.1	16.6	6.1	4.5	2.8	1.5	0.5	0.3	0.1
Missouri	13,660	19.6	20.2	15.3	22.6	10.9	7.9	2.7	0.5	0.2	0.1	*
Nevada	23	--	4.3	--	13.1	13.1	4.3	52.3	4.3	4.3	--	4.3
New Mexico	4,641	13.2	16.5	10.1	24.5	15.3	13.8	4.9	1.3	0.2	0.2	*
North Carolina	40,883	50.6	25.3	8.5	9.3	3.4	2.1	0.6	0.2	*	*	*
Oklahoma	20,415	6.7	13.1	12.7	30.4	20.3	13.3	3.0	0.4	0.1	*	--
South Carolina	37,463	33.2	27.7	12.4	14.9	6.0	4.1	1.4	0.3	*	*	*
Tennessee	41,886	32.1	34.2	12.9	13.3	4.2	2.4	0.7	0.2	*	*	--
Texas	106,478	6.2	7.7	6.5	20.1	18.9	24.7	11.6	3.2	0.7	0.3	0.1
Virginia	3,126	73.6	18.3	4.3	2.7	0.6	0.4	0.1	--	--	--	--
United States	492,412	21.5	23.2	12.0	18.0	9.8	9.4	4.2	1.3	0.3	0.2	0.1

[1/] Effective allotments refer to those established for all farms after any adjustments in farm allotments resulting from the release and reapportionment program. These were the final allotments for compliance purposes.

*Less than 0.05 percent.

Source: U. S. Department of Agriculture, Agricultural Stabilization and Conservation Service, as reported in Supplement I --Measurements of the U. S. Cotton Industry, National Cotton Council of America, June 1964.

The disposition of domestically produced cotton involves one of three outlets. The cotton may be consumed by domestic mills, exported for eventual consumption by foreign mills, or added to domestic inventory. The last use, inventory, will not be considered in this paper since it involves cyclical or short-run phenomena much more than the other two uses.

The total disposition of American cotton has been relatively stable during the last 50 years in the sense that no significant upward or downward trends have persisted. Disposition for eventual consumption has seldom been less than 11 million bales nor more than 15 million bales. However, there have been important changes in the relative shares of the market for domestic consumption and for exports.

Traditionally, the export market had been considered as the major outlet for cotton. Cotton is still important in the export market, but cotton exports have declined in absolute and relative terms since the 1920's. Domestic consumption has filled the gap. Today, domestic consumption represents about three-fifths of the final market for domestically produced cotton. It would represent an even higher percentage if the special export programs had not been initiated during the 1950's to offset the effects of relatively high domestic support prices.

Trends in Domestic Fiber Consumption

Domestic consumers used about 29 pounds of fibers per person (on a cotton equivalent basis) during the 1925-29 period. They used less during the depression of the 1930's, but used much more during the subsequent war years. Consumption reached 50 pounds in 1942 then gradually declined to an average of about 40 pounds per person by the middle 1950's. It appears to have stabilized at this level although cyclical fluctuations are evident. This is a net increase of about 10 pounds per capita over the prewar period.

Year to year changes in the domestic consumption of cotton have been similar to changes in the consumption of all fibers. However, there is one major difference. Cotton's share of the fiber market has been decreasing. It was a little more than 50 percent during the early 1960's as compared with almost 90 percent in the 1925-59 period. In addition, cotton has not participated in the post-World War II net increase in the use of fibers, either per person or in total.

Some of this loss in market appears to be due to decreasing relative prices of substitute fibers. For example, rayon staple fiber was priced at about three times the price of Middling 15/16-inch cotton in 1929. Last year it was priced at only three-fourths the price of the same grade of cotton. Similar changes are evident for the prices of noncellulosic fibers. As a result, manmade fiber consumption increased from 5 percent of the 30 pound per person market in the late 1920's to about 40 percent of the 40 pound per person market in the early 1960's.

From 1947 through 1962 there was little indication that consumption of all fibers would move above the 40 pound per person consumption level. There was no significant trend for this period. There was only evidence that manmade fiber consumption would continue to make inroads into the traditional cotton markets under the policies in effect. Simple projections for this period (excluding 1950 and 1951) indicated that cotton consumption would fall below 20 pounds per person before 1970 and would drop to equal importance with manmade fibers by 1980.

Table 2. Percentage of Acres Planted to Upland Cotton, by States and Size of Effective Allotments,[1/] 1963.

State	Total Acres	0.1- 4.9 Acres	5.0- 10.0 Acres	10.1- 14.9 Acres	15.0- 29.9 Acres	30.0- 49.9 Acres	50.0- 99.9 Acres	100.0- 199.9 Acres	200.0- 349.9 Acres	350.0- 499.9 Acres	500.0- 999.9 Acres	1000 and Over Acres
Alabama	833,621	6.1	17.1	11.7	21.1	12.6	13.0	9.9	4.5	2.1	1.5	0.4
Arizona	326,465	0.1	0.7	1.2	3.9	5.2	12.5	19.8	20.4	9.4	14.9	11.9
Arkansas	1,232,023	1.0	4.5	5.7	13.5	10.4	14.9	16.0	12.4	6.6	8.5	6.5
California	730,574	0.2	1.3	3.2	6.3	7.4	14.3	17.5	12.3	6.2	10.4	20.9
Florida	24,671	10.2	22.3	13.0	24.3	11.2	8.8	5.1	3.6	1.5	--	--
Georgia	642,559	2.4	10.4	9.5	23.1	16.8	18.7	12.3	4.1	1.6	1.1	--
Illinois	2,335	7.0	11.6	7.1	14.5	17.3	8.0	17.9	16.6	--	--	--
Kansas	4	100.0	--	--	--	--	--	--	--	--	--	--
Kentucky	6,248	5.5	8.6	5.4	17.6	19.0	21.9	18.1	3.9	--	--	--
Louisiana	523,150	1.6	7.7	7.0	15.9	11.6	15.5	16.2	12.4	5.1	5.3	1.7
Mississippi	1,442,093	2.4	7.7	6.2	12.3	8.4	11.5	14.7	14.5	8.7	8.7	4.9
Missouri	345,118	2.3	5.9	7.6	19.4	16.1	20.8	13.9	5.4	3.9	3.3	1.4
Nevada	3,364	--	0.3	--	1.3	3.6	2.9	45.2	5.8	10.0	--	30.9
New Mexico	164,814	1.0	3.4	3.5	13.5	16.2	27.0	19.4	8.9	2.0	3.6	1.5
North Carolina	384,321	12.8	17.5	10.3	18.6	12.6	13.9	8.3	4.1	0.8	0.8	0.3
Oklahoma	604,117	0.6	3.1	4.7	20.5	24.8	29.0	12.8	2.8	1.0	0.7	--
South Carolina	542,419	5.8	12.1	9.7	20.0	14.7	17.9	12.0	5.4	0.8	1.2	0.4
Tennessee	505,251	7.9	18.9	13.1	22.3	13.0	13.2	7.4	2.8	1.0	0.4	--
Texas	6,026,478	0.2	0.9	1.3	7.3	12.2	28.7	26.2	12.7	4.3	3.5	2.7
Virginia	13,910	37.8	26.4	11.1	12.0	4.6	6.5	1.6	--	--	--	--
United States	14,353,535	1.9	5.3	4.8	12.3	12.3	21.2	19.0	10.6	4.4	4.5	3.7

[1/] Effective allotments refer to those established for all farms after any adjustments in farm allotments resulting from the release and reapportionment program. These were the final allotments for compliance purposes.

Source: U. S. Department of Agriculture, Agricultural Stabilization and Conservation Service, as reported in Supplement I --Measurements of the U. S. Cotton Industry, National Cotton Council of America, June 1964.

Trends in Foreign Fiber Consumption

Unlike the United States, trends in the consumption of fibers are upward for many foreign countries. Aggregate foreign consumption of cotton and manmade fibers tripled from 1925 to 1963 to reach almost 60 million bales (cotton equivalent).

The increase in foreign fiber consumption was caused in part by the increasing populations of the countries. However, this was not the only reason. Fiber usage in foreign countries has not reached the practical "maximum" which it apparently has in the U.S., and increasing incomes have permitted higher levels of consumption per person. No foreign country has as high a level of per capita fiber consumption in actual pounds of fibers as does the United States. Western Europe averaged only about three-fifths as high (19.6 pounds) and the world average was only about one-third as high (10.7 pounds) as the U. S. levels in 1959. 2/ These consumption levels indicate considerable expansion potential for U.S. produced fibers.

The market for cotton in foreign countries has reflected the same forces as have prevailed in the domestic market. The competition from manmade fibers has been strong with decreasing relative prices and increasing capacity. In Oceania, Western Europe and Eastern Europe, manmade fibers have a greater share of the fiber market than in the United States. 3/ These are the markets with relatively large fiber consumption. In Latin America, the Near East and the Far East, the share for manmade fibers is somewhat smaller than in the U.S. Even with this competition, foreign consumption of cotton doubled in the period 1925 to 1962. In the 1952-61 period the rate of increase was 1.4 million bales per year. However, this stopped in the early 1960's and the timing for a continuation of the upward trend is incertain.

The Demand for Fibers

United States

The quantity of cotton demanded by U. S. consumers depends directly on the number of consumers, the level of consumer income, the price of cotton, and the price of cotton substitutes. Insofar as the number of consumers is concerned, each new person will require about 20 additional pounds of cotton. The relationship is approximately one to one with all other factors held constant.

The relationship is less than one to one for the effect of income on cotton consumption although it may have been this high before World War II. Blakley estimated the income elasticity for cotton at 0.93 for the inter-war period, Cromarty estimated it at 0.953, and Lowenstein and Simon estimated it at 0.92. The addition of 10 post-war years to Blakley's analysis dropped the estimate to 0.69 and 5 more years resulted in even lower estimates. This is consistent with the results reported in two USDA studies when post-World War II years were added to the analysis. It is the judgment of the authors that the income elasticity for cotton is now so close to zero that the effect of income increases on cotton consumption in the U.S. can be ignored.

2/ Computed from data in International Cotton Advisory Committee, Cotton World Statistics, Vol. 16, No. 9-10 (Part II), April, 1963, pp. 266-269.

3/ Computed from data in International Cotton Advisory Committee, Cotton World Statistics, Vol. 16, No. 9-10 (Part II), April, 1963, pp. 266-269.

The prices of cotton and of cotton substitutes are very important in determining the level of cotton consumption. In addition they are both intimately involved in any policy considerations.

Estimates of direct price elasticity for cotton, the responsiveness of changes in quantity demanded to changes in the price of cotton, vary from as low as -.23 reported by Lowenstein and Simon to as high as -1.64 reported by Telser. Blakley's estimates range from -.53 to -.86 and may be somewhat high for today's conditions if it is assumed that prices of manmade fibers respond directly to changes in the prices of cotton. It seems safe to assume that the domestic demand for cotton is inelastic with respect to price changes.

The effect of manmade fiber prices on cotton consumption, and vice versa, is difficult to determine because the structure of the market is so different now than it was in the 1920's. Preliminary results indicate that a 1.0 percent increase in the price of cotton resulted in a 0.54 percent increase in manmade fiber consumption. These results are necessarily averages for a period when substitutes were unimportant and when they were quite important. The level of consumption is now sufficiently large and the mills have the necessary machinery and know-how to change the type or mix of fibers to take advantage of favorable price relationships for one of the fibers. For these reasons, cotton consumption would be expected to be quite responsive to manmade fiber prices.

Past experience has been primarily in terms of decreasing relative prices of manmade fibers. In the next few months, the present experiment with lower domestic cotton prices will demonstrate whether or not the effect operates in both directions. It is still much too early to evaluate the full effects since one portion of it will be measured by changes in plant capacity for manufacturing manmade fibers and this is a long-run decision.

Foreign

Foreign consumers respond to the same set of economic forces as domestic consumers. The amount of cotton they consume depends on the price of cotton, the price or availability of competitive fibers, the number of consumers, and the level of income. However, balance of payment problems may result in the imposition of controls which restrict the flow of commodities in international trade such that prices to mills (excluding transportation and handling costs) are not uniform from country to country or in one country from one time period to the next. For this reason, there are difficult problems involved in determining the effects of economic forces on the level of cotton consumption.

Estimates of price elasticity in the foreign market generally are less than unity. One of the estimates by Blakley is -.13 for short-run adjustments and -.66 for long-run adjustments. Fowler's short-run and long-run estimates are similar to Blakley's short-term estimates.

The general trend of increasing availability of manmade fibers has been the same in the foreign market as in the domestic market; and the problem of evaluating changes in manmade fiber production in response to changing cotton prices is equally difficult in the two markets. It seems safe to assume that lower cotton prices will result in lower prices of manmade fibers which could dampen the incentive to expand production facilities, and vice versa.

Even with an inelastic foreign demand, the demand for U.S. cotton exports need not be inelastic. In fact, this demand may be quite elastic for certain levels of exports. Given foreign

production at a level less than foreign consumption and the least favorable elasticity coefficient, a 10-percent reduction in the export price would cause exports to increase by over 10 percent. At 1960 levels this is approximately 500 thousand bales extra for each 3 cents reduction in export price. The response is greater when larger coefficients are used. If the coefficient is a much as -.4, the response would be about 500 thousand bales for each one cent price reduction.

The Present Situation

USDA estimates the August 1 1964 carryover of upland cotton at 12.2 million bales. This figures, up from 11 million bales a year earlier, is the highest level since the record carryover of 14.4 million bales in 1956. The increased carryover during 1963-64 is due to a large crop and is in spite of a larger disappearance than a year earlier.

The 1964 planted acreage of cotton is down slightly from 1963. This suggests limited participation in the domestic allotment program. Applications for export acres under the current program total less than 88,000 out of a potential 800,000 acres. Limited participation in both the domestic allotment and the export acres features of the 1964 legislation may have resulted from the timing of that legislation, approved April 11, 1964.

USDA estimates the utilization of cotton during the 1964-65 crop year at 14.8 million bales, the same as estimated production. This estimate is based on the expectation of a sharp rise in domestic mill consumption and maintenance of exports at a relatively high level. The improved outlook is based on the lower real cost of cotton to domestic spinners, a high level of general economic activity, and an increase of "pipeline" inventories. The mill consumption rate in June was up 4 percent from May, which supports the expected 0.7 million bales increased total disappearance compared with last year.

Price Policy Alternatives

Free Market

Renewed interest has been shown recently in projections of consumption, production, prices, and exports of cotton under free market conditions. Problems with the two-price system from 1956 through 1963 have caused some to think that the free market system might be best for the cotton industry.

Prices of cotton under free market conditions have usually been estimated at 25 cents per pound or less, a reduction of about one-fourth from support prices of prior years. However, the decrease in gross income to producers might be less than 25 percent since the quantity produced and sold could be higher.

Blakley's study, utilizing fairly high price elasticity of demand estimates, suggested gross incomes to producers about the same as or a little higher than would be obtained under a straight 80 percent of parity price support program. Lower price elasticity estimates would cause the estimated gross income under free market conditions to be smaller since the equilibrium prices would be lower.

Although Blakley's estimates were based on long-run adjustments, experience under the 1964 program would seem to suggest that production from current allotments is enough to cause the equilibrium price to be significantly lower than the 24-cent level commonly used in the analyses. Prices at these levels for current production imply very low gross incomes to producers under free market conditions, at least in the short run.

Two-Price Plan

The results from most economic analyses of the cotton economy suggest that a form of multiple pricing could increase gross incomes from cotton to higher levels in the short run than could be achieved by any one price scheme. This follows from the lower price elasticity of demand in the domestic market than in the export market. In fact, the effects are magnificed by a price-inelastic domestic demand and a price-elastic export demand.

The United States participated in a two-price plan for the past decade. In the short run, there is little doubt that it resulted in greater gross and net farm incomes from the sale of cotton lint than would have existed under any fixed percentage of parity support price. In the longer run, it appeared that the domestic mill market for cotton was being lost.

The two-price plan was unsatisfactory because (1) there were no effective barriers to prohibit the movement of cotton (products) from the low priced export market back into the high priced domestic market, and (2) there were good substitutes for cotton, and the high price of cotton provided the incentive to increase the production of these substitutes from existing and new plants. Of the two factors, the latter is perhaps the most important in limiting the long-run success of any two-price schemes for cotton.

One-Price Plan

In this paper, the one-price plan is defined to include programs which permit all manufacturers, regardless of end product or geographical location, to purchase cotton of a given specification at a similar price. As defined, a system of free markets for cotton could be characterized as a one-price plan. However, the following is limited to consideration of one-price plans which combine with some scheme calculated to raise farm income above free market levels.

A major merit of one-price plans is that domestic and foreign textile manufacturers are on a similar competitive basis with respect to raw material cost. Further, when such plans lower the domestic mill price of cotton relative to the price of manmade fibers, the competitive position of cotton in domestic fiber markets is enhanced. As a consequence, domestic cotton production and value added by textile manufacturers may be increased with a resulting increase in domestic employment.

A program designed to enhance producer income could be accomplished by any of the following one-price plans:

1. Pay a fixed amount per unit of cotton production.

2. Make production payments to producers based on a fixed production base.

3. Make direct income payments to present cotton producers.

4. Establish a market in which allotments could be purchased (and sold) by the Government.

Per-Unit Payments

A fixed amount per pound of cotton produced could be paid at the producer level or at any point in the marketing channel. This system of supplemental payments could be administered via marketing certificates and would have the advantage of reasonable simplicity.

Payments could be based on total production, production from allotments, or a portion of production from allotments. This plan would be similar in scope and Government cost to the present program for cotton when based on production from allotments. It would be similar in scope to the existing program for wheat and feed grains when based on a part of the allotment, such as for the domestic market, but costs to the Government and benefits to producers could be lower than with the present cotton program.

Allotments would be required for success of the per unit payment program. Otherwise, Government costs could skyrocket. The per-unit payment program has the additional disadvantage that, except for a direct two-price system, it may appear closer to an export dumping scheme than any of the other plans outlined in this section. This is particularly true if the per-unit payments are made for only the portion of the cotton moving into the domestic market.

Production Base Payments

The plan envisaged here is slightly different from the usual one. It is proposed under this plan that production payments be made on the basis of an invariate production base. Neither allotment nor yield would be updated over time, but the payment rate per unit of production base could be varied to meet predetermined income goals. This plan would provide wide production and marketing flexibility, and would permit the price system to perform its traditional function of guiding resource use. With a fixed production base, persistent capitalization of program benefits into land prices might be halted.

Considerable discretionary leeway could be provided in terms of income goals, support and payment levels, and allotments. Such would permit gross income goals to be lowered as cost reduction technology is developed. Further, price support and income payment combinations could be altered to minimize consumer and public costs and CCC stocks in a manner commensurate with producer income goals.

This plan is a sufficient departure from existing programs that a question arises concerning producer and public acceptance. Until operating experience could be gained, perhaps allotments should be enforced. If payments were made only when alloted acres were planted, past experience suggests substantial abandonment of allotments. If this were considered inequitable, or otherwise undesirable, the sale of allotments could be permitted. Such sales could be handled on a bid basis by ASCS, with sales restricted to allotments below a given minimum and with bidders restricted by geographical area if desired. Also, a maximum income payment level could be established if such is considered desirable.

Initially at least, a price stabilizing support and storage program would be necessary. However, to make the program workable, support prices would be set at or slightly below expected equilibrium levels and not at levels calculated to support producer incomes. The latter would be accomplished by the production payments.

Direct Income Payments

Direct producer income payments to compensate for a drop in prices to the free market level could be employed as a program. With about 500 thousand cotton producers and annual government costs of about $600 million, a payment of about $100 per month per producer might be made.

A payment scheme such as this would not embody progressive benefits such as those of most price and income support programs. The effective rate of payment per unit of production would be greater for the small producers than for the large produces. A rate of $100 per month per producer would be equivalent to $40 per acre for 30 acres of cotton or about 8.5 cents per pound at bale-to-the-acre yields. This rate would be equal to or greater than benefits under the 1964 program for 75 percent of cotton producers.

The market price of cotton under direct income payments could be at the free market level and allotments could be eliminated. This would mean a rather severe price and income adjustment for producers of about 75 percent of the cotton, but they would be free to produce cotton with any combination of land, capital, and labor which appeared most efficient. Downward adjustments in land values probably would result.

Initially, the income payments would bolster the local economies characterized by large numbers of small cotton farmers. With a requirement that an individual would have to plant his allotment to be eligible to receive the payment, the problem of interregional transfers of acreage might not be as large as it would under strict free market conditions. However, it does seem plausible that interregional transfers of production would occur and this would have impact on cotton marketing agencies located in the regions losing the production. Based on S-42 research results, it appears that the Delta and Southwest regions might increase cotton production.

Government Purchase of Allotments

Sometimes in jest and sometimes seriously, it has been proposed that the Government purchase cotton allotments from producers. Systems could be instigated at one extreme to purchase only enough allotment acreage to equate demand and production at a given percentage of parity level. At the other extreme, all allotments could be purchased and the price of cotton could be free to seek its own level.

An attempt to set the price of cotton above the market level and to equate production with demand by purchasing allotments is not much different from the price support system used for cotton prior to 1956. The main difference is that there would be no statutory limitation on minimum national acreage. One problem with this type of system is that the target price could not be high enough to maintain gross income to cotton producers. Losses of the export market to foreign producers and the domestic market to manmade fibers and foreign producers would severely limit any possible increase in gross or net income to domestic producers.

Although there would be some gain to producers who elected to sell their allotment, these would still be capitalization of any benefits of the program into land, the most fixed factor of production.

The attempt to purchase the entire value of allotments in order to have free market prices would be expensive and would have several consequences. Current payments are equivalent to $30 to $40 per acre. Capitalized at 5 percent interest (a rate somewhat higher than used for current land prices because of uncertainty), the cost could exceed $10 billion. A one-shot introduction of this much capital into the agriculture of the cotton producing areas could distort land values if the desire for ownership *per se* were strong enough. Cotton acreage probably would move across current State and regional boundaries to the areas which received the greatest payments for the values of the allotments. It would appear that neither the payment not the loss of cotton acreage would contribute much toward the economic well-being of the majority of the cotton producers. Most of these benefits would accrue to larger producers located in the regions with the most productive land.

Summary

Acres planted to cotton have fluctuated over a wide range during the present century, but have trended downward since the early 1950's. On the other hand, cotton production has been characterized by stability. Utilization of cotton has also been relatively stable during recent years, but the relative importance of the domestic market has declined because man-made fibers have made serious inroads on the utilization of cotton in the domestic market. In fact, in recent years, cotton has failed to share in the growth of the domestic fiber market.

The income elasticity of demand for cotton in the United States apparently approaches zero, but is significantly greater than zero in most of the world. The demand for cotton in the United States and in foreign countries is inelastic with respect to price, but foreign demand for U. S. cotton may be highly elastic. In the short run, utilization of manmade fibers, and, in the long run, the capacity to produce manmade fibers, appear highly responsive to cotton prices.

Free market prices for cotton would allow cotton producers to compete for domestic and world fiber markets, but incomes of producers would be reduced severly, particularly in the short run. Further, there would likely be major shifts in the present pattern of production, and land prices would be expected to decline.

A two-price plan for cotton, such as that operated 1955-63, has certain theoretical advantages. However, it was unsatisfactory because there were no effective barriers keeping manufactured cotton goods out of the U. S. market, and no way to prevent inroads of manmade fibers into fiber markets.

Several variations of one-price plans were investigated. The different plans utilize different mechanisms for transferring income to producers.

A one-price plan, with production base income payments would allow market prices to guide production, marketing, and manufacturing decisions, and would provide producers income supports. The benefits from the production payments would be distributed essentially as allotments (benefits) of the present and recent programs. A one-price plan involving incentive payments per unit of production would require that allotments be enforced, might involve high Government costs, and may be vulnerable to charges of export dumping.

Another income payment plan, based on a flat rate payment to cotton producers, would distribute income benefits quite differently from past and present programs. The primary increase in income benefits would be to small cotton producers. Some implications of Government purchase and sale of allotments were also considered.

Benedict, Murray R., and Stine, Oscar C. The Agricultural Commodity Programs. New York: The Twentieth Century Fund, 1956.

Blakley, Leo V. A Review of Problems and Policies for Cotton. Paper presented at the Southern Agricultural Review Conferences, January, 1963.

_____________. Discussion: The Cotton Situation Now. Paper presented at the Fourth Annual Policy Review Conference, January 11, 1964.

_____________. Quantitative Relationships in the Cotton Economy with Implications for Economic Policy, Oklahoma Agricultural Experiment Station Technical Bulletin T-95, May, 1962.

Cable, C. Curtis, Jr. A Chronology of Government Programs for American Upland Cotton. Arkansas Agricultural Experiment Station Bulletin 587. Fayetteville, Arkansas: University of Arkansas, 1957.

Cox, Clifton, and Pherson, Vernon W. The Competitive Potential of the U.S. Cotton Industry. Boston: Harvard University, Graduate School of Business Administration, Division of Research, 1959.

Cromarty, William A. "Economic Structure in American Agriculture," Unpublished Ph.D. thesis, Michigan State University of Agriculture and Applied Science, 1957.

Donald, James R., Lowenstein, Frank, and Simon, Martin S. The Demand for Textile Fibers in the United States, U.S. Department of Agriculture Technical Bulletin No. 1301, November, 1963.

Economic Research Service, U.S. Department of Agriculture. Cotton Situation, CS-208, Various Issues.

_____________. Statistics on Cotton and Related Data 1925-1962, Statistical Bulletin 329, and Supplement for 1963.

Fowler, Mark L. "An Economic-Statistical Analysis of the Foreign Demand for American Cotton," Unpublished Ph.D. Dissertation, University of California, Chapter 5.

_____________. Export Demand for U.S. Cotton: Implications of Structural Changes in the World Cotton Economy, Oklahoma Agricultural Experiment Station Bulletin B-616, December, 1963.

International Cotton Advisory Committee. Cotton - World Statistics, Vol. 16, Nos. 9-10, (Part II), April, 1963.

Lowenstein, Frank, and Simon, Martin S. "Analysis of Factors that Affect Mill Consumption of Cotton in the United States," Agricultural Economics Research, VI, No. 4 (October, 1954), 101-110.

Mullendore, Walter. "Analysis of Alternative Pricing Plans for Cotton," Unpublished M.S. thesis, Oklahoma State University, 1963.

Plaxico, James S. "Cotton in an Efficient Southern Agriculture," Mimeographed paper presented at the Beltwide Cotton Production Mechanization Conference, Memphis, Tennessee, January 11-12, 1962, p. 20.

Telser, Lester G. "The Support Program and the Stability of Cotton Prices," Journal of Farm Economics, XXXIX, No. 2 (May, 1957), p. 405.

Wellford, Dabney S. Measurements of the U.S. Cotton Industry, Supplement I, National Cotton Council of America, June, 1964.

Wilcox, Walter W. "Agriculture's Income and Adjustment Problem," Economic Policies for Agriculture in the 1960's. Joint Economic Committee, Joint Committee Print. Part I. 86th Congress, 2d Session, 1960.

U.S. Senate, Committee on Agriculture and Forestry. Report on Farm Price and Income Projections, 1960-65. Document No. 77. 86th Congress, 2d Session, 1960.

TOBACCO

W. D. Toussaint
North Carolina State College

Although there are several different types of tobacco produced in the United States--all important to some areas--the concern of this paper will be with burley and flue-cured, the two major types. However, some of what follows should apply to the other types as well.

The tobacco program has been operated with only minor changes since 1939. In some respects, it has been a very successful program. Government costs of the program have been low, at least relative to the cost of programs for some other farm commodities. The program has tended to stabilize price, and to a lesser extent, production. Clearly, farmers have received increased prices for their tobacco, and their incomes probably have increased as a result.

A side effect of the program has shown up in that the benefits of the program have become capitalized into land values. The extent of this capitalization can be seen by the fact that growers in eastern North Carolina are paying about 15 to 20 cents per pound under the Lease and Transfer Law for the privilege of growing flue-cured tobacco.

The recent Surgeon General's Report, Smoking and Health, raised serious questions for the entire cigarette industry. The full effects of this report on the cigarette industry and the tobacco farmer won't be known for some time. Yet, the problems raised by this report only added to important problems already facing the industry. Tobacco stocks are at high levels (see Appendix tables 1 and 2), and much has been said regarding the deterioration of the quality of United States tobacco. A recent USDA report, 1/ for example, showed that the percentage of flue-cured tobacco placed in the first three quality groupings has fallen from 31 percent in 1946-50, to 21 percent in 1951-55 and to 10 percent in 1963. The grade classification of burley tobacco did not show such trends, but the report concluded that the increased loan take, lower average prices and views of manufacturers and dealers suggested a deterioration in burley tobacco also.

Consumption

With rapidly increasing incomes and population in the United States and throughout the world, consumption of United States tobacco might be expected to have increased substantially during the last decade. But this hasn't been the case, either in the foreign market or the domestic market.

Exports

Burley exports have been increasing slowly over the years but amounted to only 10 percent of domestic consumption in the 1963 marketing year. During the last 15 years, however, 30 to 40 percent of United States flue-cured production has been sold on the foreign market. In general, the United States has about maintained flue-cured exports over these last 15 years. What hasn't been done is to share in the rapidly expanding world demand for flue-cured tobacco. For example, during the period 1950-54, the United States exported two-thirds of the free world's flue-cured exports. In 1962, this had dropped to a little less than one-half.

1/ A Report on Tobacco Quality Factors prepared by an interagency committee of the U. S. Department of Agriculture, February 19, 1963.

The reasons for failure to share in world trade are several. First, other countries are increasing their production and improving the quality of the tobacco they produce. At the same time, United States tobacco prices have been increased substantially over time, although this was slowed up by a change in the method of computing support price a few years back. Apparently, also, the quality of the tobacco produced and exported has been decreasing (particularly flue-cured) during this same period.

To an extent, of course, the high price and poor quality both are effects of the present tobacco program. On the one hand, the higher price is an objective of the program. The poor quality, at least in part, may be a result of the method of controlling production which is based on controlling acreage and providing a very strong incentive to produce high yields to obtain high net income per acre. In part, also, it may be a result of a grading, marketing and price support system which doesn't fully allow market demand to be reflected in market prices for the various grades.

In any event, quality obviously is important to both foreign and domestic markets. Other countries can sell low or medium quality tobacco at lower prices than the U. S. farmer is willing to accept. Thus it is quite important that the necessary steps are taken to ensure production of good quality tobacco.

The long-run outlook for U. S. tobacco exports indicates that it will be difficult to increase, or maybe even maintain, the present level of exports unless there is a decrease in price, an increase in quality or possibly both. Tariffs and other factors are very important here too. Present and future tariff negotiations should be watched closely as to their effects on U. S. tobacco exports. Another point is that, from 1960 to 1962, almost 20 percent of tobacco exports were Government financed. There may be some pressures to decrease this proportion in the future, and this would have some adverse effects on our export markets.

Domestic Market

In 1950, persons 18 years old and over in the United States smoked an average of about 3,500 cigarettes per year. This had increased to about 4,300 cigarettes per person 18 years and over by last year, an increase of more than 20 percent in 13 years. But at the same time, the pounds of tobacco consumed per person hasn't increased at all. The main reasons for this are: (1) There is a greater use of filter tips--up to almost 60 percent at the present time, and (2) there is a greater use of homogenized leaf by tobacco manufacturers, allowing them to get more cigarettes from the same quantity of tobacco.

An additional problem from the flue-cured tobacco standpoint is that there has been a considerable substitution of aromatic for flue-cured tobacco. In 1950, about 6 percent of the American cigarette was made up of aromatic tobacco. This percentage had increased to about 10 percent in 1961, 1962, and 1963. The proportion of the cigarette composed of burley has been almost constant during this time, indicating that the added aromatic has replaced flue-cured tobacco. Some of the substitution may be due to increased use of filters; another part is probably due to price, and part may be due to increased availability of aromatic tobacco. As a result of all these factors, the total increase in domestic consumption of flue-cured tobacco has been less than the increase in population.

In the long run, income increases in the United States are favorable for increases in cigarette consumption and tobacco use. In general, there is an increase in smoking with an increase in income. However, the effects of the Surgeon General's Report, _Smoking and Health_, are not known as yet. It will certainly have some immediate effects, but the longer term effects would seem to depend on the types of action which might be taken by the Government. For example, restraints on advertising certainly would tend to have an effect over time. Second, there could be an increase in Federal

taxes on cigarettes. This would have some effect on consumption, but cigarette consumption doesn't decrease greatly as price increases. Third, educational campaigns may be aimed at the younger potential smokers. Clearly, it appears that this would have a dampening effect on the increases in smoking in the United States.

Production and Stocks

Burley tobacco stocks are the largest on record, and flue-cured stocks are at the highest level since 1957. The Flue-Cured Tobacco Stabilization Corporation alone has an amount of tobacco equal to almost 60 percent of a normal year's consumption (foreign plus domestic). The Stabilization Corporation's receipts in 1963 were the highest since 1956 and were almost half of the sales in the Old Belt. Almost 27 percent of the 1963 burley crop was placed under Government loan, the highest percentage since 1954.

These increases in stocks are due to the factors already mentioned as holding down consumption, to a failure to cut tobacco acreage sufficiently and to a very rapidly increasing yield. As acreage has been cut, tobacco farmers have been using their better land for tobacco, increasing the intensity of their production practices and adopting higher yielding varieties so that flue-cured yields have risen from about 1,250 pounds per acre during 1952-54 to 1,975 pounds per acre in 1963. The average yield is indicated at around 2,100 pounds for 1964. Burley yields have risen from about 1,450 pounds per acre in 1952-54 to 2,231 pounds in 1963. (Yield increases for other tobacco types have not been great during this period, except for the dark air-cured and Ky.-Tenn. fire-cured types.)

The formulas used for computing national acreage allotments utilize an average yield based on a past period. The fact that yields are increasing so rapidly, combined with the fact that the Secretary of Agriculture's discretionary authority of 20 percent of needed annual production has been used each year in setting national acreage allotments, has led to the present situation of greatly excess stocks. Unless a more realistic method of computing expected per acre yields is used and unless the Secretary discontinues use of his discretionary authority, continued overproduction and stock accumulation is almost certain under the present acreage control program.

Alternative Government Programs

Because of the failure to control production adequately with the present program and because of the apparent adverse effects on quality (at least partially due to the present program), there is interest in alternative programs for controlling tobacco production. The most discussed of these alternatives is that of quantity (poundage) control or some variation of poundage control. Thus, a poundage control system is discussed (without all the administrative details) as it might be expected to compare in several respects with the present system. Then, two variations on a poundage system are examined, and brief mention is given to several other potential methods of controlling production and/or supporting price.

Poundage Control

Under a poundage control plan, the incentive for farmers would tend to be shifted from that of obtaining maximum net income per acre to that of obtaining maximum net income per pound of tobacco sold. Farmers would be expected to use somewhat less-intensive cultural practices than those currently employed, and varieties with lower yield potential but which produce better quality tobacco would be planted if poundage control were in effect. Assuming that the use of less-intensive cultural practices and better varieties would lead to better quality tobacco, a poundage control program would help increase the demand for tobacco in both the domestic market and the foreign

market. The expected improvement in tobacco quality is the main reason that a poundage program has been discussed as an alternative to the present one. How much better the quality might be is not known. This depends on how this better quality might be reflected in the prices paid for the various grades of tobacco produced and how farmers would respond. Also, poundage control is not likely to be very helpful in solving problems which arise due to nonvisual quality characteristics. These problems require other solutions.

A poundage control system which would be workable and acceptable to the growers, almost of necessity, would have to be flexible. That is, the program would have to be set up so that a farmer who produced less than his poundage allotment for any one year would be allowed to carry the unused portion of his allotment forward to the succeeding year. If desired, provisions could be included for allowing sale of excess tobacco at a penalty and/or allowing transfer of allotment among farmers after harvest.

In general, the adoption of yield-increasing practices over the years has tended to result in decreased tobacco production cost per pound. Farmers would have greater production flexibility with poundage control than with acreage control in that acreage is not restricted and they could use that combination of production practices giving them the highest profit per pound of tobacco. This means that the production cost per pound would be equal to or less than the production cost per pound with the present system for a given quality of tobacco. On the other hand, per pound production costs might be increased to the extent that farmers would not sell all of the tobacco under a poundage system, thus raising the cost of production per pound of tobacco sold. The net result of a poundage control system on production costs is not known at the present time, but net returns per pound received by the farmers almost certainly would be higher than is the case with acreage control.

If acreage cuts are large enough with an acreage control system, production of flue-cured tobacco can be kept within the bounds of acceptable levels of storage stocks. The basic difficulty experienced has been that acreage has seldom been cut enough to bring about the desired level of production. Tobacco acreage is cut; yields go up; production goes up, and acreage is cut again. Under a poundage control program, control of tobacco production could be just as complete as policymakers are willing to impose.

Under the present system of controlling tobacco production, nearly all of the tobacco produced is sold, including all of the bottom leaves as well as the tips. If a poundage control program were in effect, some of the lower price tobacco, particularly that from the lower part of the stalk and that from the top, would not be sold. However, if the poundage system is flexible so that a farmer can grow unused allotment in a succeeding year, the amount of tobacco thrown away or not harvested should be relatively small once the farmers have adjusted to such a program. Farmers would throw away only the very cheapest tobacco--generally that which sells for less than \$.30 or \$.45 per pound. Usually less than 5 percent of flue-cured tobacco is sold at less than \$.30, and about 10 percent is sold for less than \$.45 per pound. Since this is the case, there probably wouldn't be too large a quantity of tobacco thrown away. It is true, of course, that if any tobacco is thrown away, it may have substantial effects on those companies that buy this less expensive tobacco. It is also true that, if these companies still want these types of tobacco, prices being paid for these particular types would rise somewhat over time. Whether it would be helpful or detrimental to our tobacco industry to have a small amount of relatively low-cost, low-grade tobacco thrown away is not clear.

A poundage control system would be more flexible than acreage control in that it would allow more choice regarding the combinations of land, labor and capital that might be used to produce a given quantity of tobacco. Also, considerable flexibility would exist with such a system in that, if bad weather or other conditions caused a farmer to obtain a small quantity of tobacco in any one year, his tobacco allotment

would be increased in the next year. This provides him with a built-in crop insurance feature. Further, farmers with very small allotments might find that they could improve their incomes substantially by only producing tobacco every other year.

Farmers are familiar with the acreage control program and know pretty well how to manage under such a system. With a poundage control program, management problems would arise in that farmers would have to determine the combinations of practices which would be best for this type of program. Management decisions also would have to be made regarding the amount of tobacco that farmers would try to produce so that they would not produce more than their poundage allotment. Nor, on the other hand, would they want to produce much less than their allotment, except in special cases. Special management problems would arise on rented farms. There would be problems of compensation for unused and carried-forward allotment on single-unit tenant farms. On multiple-unit farms additional problems would arise in allocating poundage allotment among various tenants on the farm. Any major change--and a poundage control program would be a major change--involves substantial problems of management. Time is required for adjustment, but none of the managerial problems mentioned here appears to be overwhelming.

There would be longer term effects of a poundage system also. Plant breeders would be expected to change the emphasis of their program in that less emphasis would be placed on obtaining high yields per acre and more would be placed on developing varieties which produce high quality tobacco at a relatively low cost per pound. In addition, a poundage control system would supply much more incentive for mechanization than does the present system. Under the present system, field loss--which is almost inevitable to some degree with mechanized harvesting--is very expensive. The average cost per pound of leaving a green leaf in the field is about $.40; a 5 percent loss with a 2000-pound yield is $40.00 per acre with the present system. If the poundage control system were in effect, a small amount of field loss would be easier to accept, and farmers could plant a slightly larger acreage to allow for the expected field loss.

The present program is relatively easy to administer. The program has been in effect for some time, and farmers are well acquainted with the system of acreage measurement and yield reporting necessary with such a program. There seems to be little reason to expect that a poundage control system would not be just as easy to administer. Acreage measurement would not be required with poundage control. The point of production control would be shifted from the land to the marketing channels. However, it would appear that this can be done with relative ease.

One problem of a poundage system is that poundage bases would have to be established for all farms to replace their present acreage allotments. The allocation of bases under a poundage control program is a question of fairness or equity, and there is no way of settling such problems so that everyone is better off than he was before. Recent research has shown, however, that the problem of allocation of poundage to the various areas within the state or to the various producing areas in the region is not too critical. As long as at least 3 years of past history are used in setting the base, each area or region would get almost the same proportion of the base as would be the case if any different 3-year period were chosen.

Within areas, the problem does become more critical. Some judgment would be needed on the part of national administrators and county committees in establishing poundage bases for individual counties and individual farmers. For example, one farmer might have had an unusual history of hail storms, dry weather or disease for the period used in establishing the base and would get too small an allotment if bases were established solely on yield history for a particular period. Another point often raised with respect to allocation of poundage is that extremely high yields should not be used in establishing poundage bases. Those who advocate this argue that people

who have achieved these high yields have been doing so at the expense of quality and have been harming the tobacco industry. On the other hand, some argue that no penalty should be placed on these people for producing high yields, since this is exactly what the present program of acreage control has been encouraging. Further, it is not clear that all people with high yields have been producing poor quality tobacco. If it were desired, however, some maximum yield per acre (maybe some percentage of the county average) could be used in setting the bases for the individual farmers.

Acreage-Poundage Control

A variation of the poundage control program is the combination of acreage control and poundage control, or what is commonly called an acreage-poundage system. This system has been advocated because the acreage limitation on the individual farms would prevent any one farmer from growing a large amount of tobacco on his farm and selling it to other farmers or selling it on other marketing cards. Such a system would be effective in limiting individual farmers in terms of the amount of their production. On the other hand, the fact that an acreage limitation is placed on farmers, even though it is in conjunction with a poundage allotment, makes it possible that the acreage limitation part of the control program may be the effective part. If this occurs, farmers would be in the same position as under acreage controls in that they would try to get high production per acre. Of course, this would defeat the purposes of a poundage system.

A combination acreage-poundage plan would be more costly to administer than a straight poundage control plan because control would have to be maintained over both the acreage and the poundage. A combination system might, however, improve acceptability as opposed to a poundage control program. It is possible that after a short experience with acreage-poundage, the acreage part of such a proposal would be found unnecessary, and a change to a straight poundage plan could be easily accomplished.

Poundage with Excess Sales at a Penalty

One of the potential problems of the poundage system mentioned above is that all tobacco produced might not be sold and that companies wanting this low-price tobacco might be hurt as a consequence. A suggested way of alleviating this problem is to have a system of poundage control (or acreage-poundage) and allow sale of tobacco beyond the farmer's poundage allotment at a penalty of (say) 50 percent. Limits could be placed on the amount of excess sales allowed (maybe 5 to 15 percent). A farmer who did not produce all of his quota would be allowed to sell this unused poundage quota to another farmer with production in excess of his quota. Excess tobacco would be sold at the market price. The farmer would receive one-half (or some other proportion) of the proceeds; the other one-half could be used to defray Government storage expenses on loan stocks and/or to promote foreign sales.

Such a system should encourage production of better quality tobacco since farmers would have the poundage control incentive of getting maximum net revenue per pound of allotment. However, the biggest unknown with this program is the strategy producers would follow. If all producers would try to assure themselves of having enough tobacco to meet their quota, the amount of overproduction (sold at a penalty) could approach the maximum allowed. On the other hand, some producers might try to produce only their allotment. Those who underproduced because of weather or other variables would have unused poundage quota, and they could sell this unused quota to those who overproduced.

Such a system probably would not improve tobacco quality to the extent that poundage control would. Also, although the extent of overproduction and penalty sales is difficult to predict, it is expected that it would be substantial. Thus, total tobacco

production probably could not be controlled as precisely as with a poundage control system without the penalty sales.

The system should be effective in causing farmers to sell all the tobacco they cure and grade. Small amounts of very poor tobacco (harvested and cured under the present system) might be left in the field under this system, but farmers would be expected to sell nearly all tobacco once it is cured. It should be pointed out that this lower quality tobacco would go into commercial channels and, thus, would to some extent replace other sales (from the United States or from other countries).

One other problem of this system is one of foreign relations. The penalty money would be used to promote foreign sales and would, in effect, be a subsidy of foreign sales. The subsidy, however, would be paid by the farmers themselves--not directly by the Government. This might not be a serious problem unless penalty sales of excess tobacco (and the resulting penalty money) are substantial.

It appears that farmers' average prices and incomes would be higher under a straight poundage system than under the excess sales of a penalty plan. How much higher depends on the extent to which farmers overproduce and sell at a penalty. If penalty sales are large, average prices would be substantially lower because of the penalty provision on that part of the poundage sold in excess of allotment

Other Programs

Several other programs have been discussed from time to time for controlling production and/or supporting price. These generally are not considered feasible alternatives at this time for one or more reasons but are discussed briefly here since they do have advocates.

Production Practice Control. One method of production control sometimes advocated is that of controlling plant population. It seems clear that simple control over the number of plants per acre would not be adequate. Farmers would find ways to increase the number of leaves per plant and/or increase the amount of fertilizer or other cultural practices. It is expected that such a system invariably would lead to the necessity to control all or nearly all cultural practices. A system in which all cultural practices and varieties were controlled could be effective in terms of improving the quality of our tobacco. On the other hand, such a system would be quite costly and difficult to administer. It would involve almost complete regimentation. Farmers would not be expected to accept such a system of complete control over their cultural practices very readily.

Two-Price Plan. With a two-price system, a certain quantity of tobacco is sold on the domestic market at one price, and other tobacco is sold on the foreign market at a lower price. The basic consideration in knowing whether a two-price system would increase the income of U. S. tobacco farmers is whether sales on the foreign market could be expanded enough by selling tobacco at a lower price to make up for the lower price received for that portion of the market which is presently sold as export tobacco. For example, assume that flue-cured exports now amount to 400 million pounds at $.60 per pound. Suppose also that farmers can produce additional tobacco at $.30 per pound. To make as much profit if the export price dropped $.10 per pound as farmers now make, exports would have to increase to 600 million pounds. This would involve displacement of about half the present exports of free world competitors. This example helps point up the importance of cost of production, the decrease in price as exports are expanded and the amount of export expansion as determining the potential profitability of a two-price plan. Unfortunately, information on the potential sales expansion and expected prices is largely a matter of judgment, making it very difficult to analyze the possible effects of a two-price plan.

Deficit Payments. At the present time, Canada is using a system of deficit payments. Price supports are established, but the prices are not supported on the market. The tobacco is sold at the market price, and farmers are paid a differential between their average price and the average support price. This has the advantage of allowing the market to reflect more accurately the prices for the individual grades. This might have some beneficial effects in terms of improving the quality of tobacco produced. On the other hand, such a program makes the Government payments for subsidies obvious, and for this reason such programs are vigorously opposed by farm groups and probably would be opposed by the Congress at the present time.

A Note on Price

In examining all of the alternative tobacco programs, it has been assumed that the present price support level would be maintained. Whether tobacco farmers could possibly improve their income position by decreasing price is very questionable because of the nature of the demand for tobacco. Yet, it seems clear that price has been and is a factor holding down sales of U. S . tobacco.

Tobacco producers and Congressmen in 1959 supported a bill to hold support prices at the 1958 level until (in effect) the Parity Index would rise 11 percent. After that time, support prices would rise according to production cost increases. Had this bill not been vetoes by President Eisenhower, tobacco support prices would still be at the 1958 level. The price support bill passed and signed in 1960 did slow down the price-increasing effects of "modernized parity," but the price support level now is higher by about 5 percent than it would have been if the 1958 bill had been signed.

Serious thought might be given to a price-stabilizing measure (in conjunction with one of the programs discussed above) which would be similar to the 1958 bill. Such an action would tend to reassure tobacco buyers (foreign buyers, in particular) that U. S. tobacco prices would not rise rapidly in the near future. This action might encourage substantial additional sales as a result since foreign companies could develop sales of cigarettes containing American tobacco with assurance that their raw product prices would be relatively stable for a period of years.

On the other hand, it should be made clear that the U. S. tobacco farmer probably has received increased net income (at least in the short run) by a policy of high support prices and controlled production. Whether tobacco farmers could realize political and/or economic gains from a hold-the-line price policy at the present time is not clear, but it would appear that such an action should at least be considered.

Summary

The present method of controlling tobacco production has worked moderately well in that tobacco prices have been raised and tobacco farmers' incomes improved. Also, relative to Government programs for some other farm commodities, the program has been inexpensive--at least until recent years. The program as now set up, however, does not give maximum incentive for the production of high quality tobacco. This--along with high price supports--has had detrimental effects on domestic and foreign markets for U. S. tobacco.

Alternative methods of supporting price and/or controlling production are available which should improve the incentive to produce better quality tobacco. It would appear that some changes are needed in the present tobacco program in order to improve this incentive to produce better quality tobacco and, thus increase the demand for U. S. tobacco. Unfortunately, no program that would provide this incentive is without its disadvantages. Thus, these advantages and disadvantages must be carefully weighed in developing a program in the best interests of the entire tobacco industry.

Appendix Table 1.--Flue-cured tobacco, types 11-14: Domestic supplies, disappearance, season average price, and price support operations for specified periods (From Tobacco Situation, September 1964, with revisions)

(Farm-sales weight)

Year	Production	Stocks, July 1	Supply	Disappearance 1/ Total	Disappearance 1/ Domestic	Disappearance 1/ Exports
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1955	1,483	2,056	3,539	1,281	728	553
1956	1,423	2,258	3,681	1,170	705	465
1957	975	2,511	3,486	1,178	737	441
1958	1,081	2,308	3,389	1,179	736	443
1959	1,081	2,210	3,291	1,185	766	419
1960	1,251	2,106	3,357	1,267	792	475
1961	1,258	2,090	3,348	1,267	782	485
1962	1,408	2,081	3,489	1,208	777	431
1963	1,371	2,282	3,653	1,274	772	502
1964 2/	1,318	2,379	3,697			

Year	Average price per pound	Price support level 3/	Placed under Government loan: Quantity	Placed under Government loan: Percentage of crop	Remaining in Government loan stocks on Sept. 30, 1964
	Ct.	Ct.	Mil. lb.	Pct.	Mil. lb.
1955	52.7	48.3	298.9	20.2	0
1956	51.5	48.9	319.9	22.5	0
1957	55.4	50.8	107.8	11.1	28.0
1958	58.2	54.6	144.8	13.4	64.8
1959	58.3	55.5	55.3	5.1	18.7
1960	60.4	55.5	51.8	4.1	31.2
1961	64.3	55.5	70.5	5.6	54.1
1962	60.1	56.1	237.2	16.8	226.5
1963	58.0	56.6	277.2	20.2	266.9
1964		57.2	4/	4/	
Total	---	---	2,229.8	---	690.2

1/ Year beginning July 1.
2/ Subject to revision.
3/ Through 1959--90 percent of parity price; 1960 set at 1959 level; from 1961 on, adjusted to reflect relative change between 1959 parity index and average of parity index for 3 most recent calendar years.
4/ Through the third week of October, 222 million pounds, about 20 percent of deliveries, were placed under loan.

Appendix Table 2.--Burley tobacco, type 31: Domestic supplies, disappearance, season average price, and price support operations for specified periods (From Tobacco Situation, September 1964, with revisions)

(Farm-sales weight)

Year	Production	Stocks, Oct. 1	Supply	Disappearance 1/ Total	Disappearance 1/ Domestic	Disappearance 1/ Exports
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1955	470	1,347	1,817	518	484	34
1956	506	1,299	1,805	510	482	28
1957	488	1,295	1,783	506	478	28
1958	465	1,277	1,742	518	483	35
1959	502	1,224	1,726	535	499	36
1960	485	1,191	1,676	549	508	41
1961	580	1,127	1,707	570	525	45
1962	675	1,137	1,812	584	531	53
1963	755	1,228	1,983	571	517	54
1964 2/	607	1,412	2,019			

Year	Average price per pound	Price support level 3/	Placed under Government loan: Quantity	Placed under Government loan: Percentage of crop	Remaining in Government loan stocks on Aug. 31, 1964
	Ct.	Ct.	Mil. lb.	Pct.	Mil. lb.
1955	58.6	46.2	73.1	15.6	0
1956	63.6	48.1	6.0	1.2	0
1957	60.3	51.7	16.6	3.4	5.5
1958	66.1	55.4	11.2	2.4	1.2
1959	60.6	57.2	13.2	2.6	4/7.1
1960	64.3	57.2	8.4	1.7	4/7.3
1961	66.5	57.2	10.3	1.8	4/9.7
1962	58.6	57.8	63.5	9.4	4/60.3
1963	59.1	58.3	202.8	26.9	4/199.2
1964		58.9			
Total	---	---	974.0	---	4/290.3

1/ Year beginning October 1.
2/ Subject to revision.
3/ Through 1959--90 percent of parity price; 1960 set at 1959 level; from 1961 on, adjusted to reflect relative change between 1959 parity index and average of parity index for 3 most recent calendar years.
4/ A total of about 31 million pounds have been sold from the designated crops.

AN APPRAISAL OF DAIRY PRICE POLICIES

Linley E. Juers

The purpose of this paper is to review various alternative approaches to dairy price support legislation which the administration might consider in developing its legislative program for 1965 and thereafter. The paper is divided into two sections, the first entitled "The Dairy Problem" and the second section entitled "Dairy Policy Alternative." The first section includes both an economic description of the "dairy problem" and some analysis of the political 1/ setting within which any chosen dairy policy course must be implemented. The second section reviews several alternative dairy price policy approaches and attempts to evaluate each with respect to both economic and political feasibility. Some of the policy alternatives presented are familiar ones which have received wide public discussion while others have received only a more limited degree of attention.

The Dairy Problem

The economic justification for Government programs to support and stabilize milk prices has been widely discussed in recent years and need not be the subject of an extensive review in this paper. The present income problems faced by dairy farmers differ only slightly, either in origin or manifestation, from the problems faced by producers of other agricultural commodities.

The Federal Government has operated programs to support and stabilize milk prices continuously since the early 1930's. The dairy price support program and the Federal milk marketing order program both originated with the Agricultural Adjustment Act of 1933. The authority for dairy price supports through commodity purchases was changed several times between 1933 and the enactment of the present dairy price support law in 1949. The milk marketing orders, however, have operated under a virtually unchanged authority since the major amendment of the marketing orders and agreement section of the Agricultural Adjustment Act in 1935.

The objectives of the milk marketing orders and of the dairy price support program are similar in the respect that both seek to stabilize milk prices paid to farmers at levels higher than might otherwise prevail. The statutory pricing objectives of both indicate that the prices to be established should be prices which will provide an adequate and, by implication, a not excessive supply of milk. The dairy price support legislation provides a minimum support level, however, of 75 percent of parity which must be maintained whether supplies are excessive or not. While the marketing orders legislation provides no such minimum price objective, individual marketing orders have contained provisions which, by limiting the inshipment of outside milk supplies, have tended to avoid excessive supplies irrespective of prices established.

The major difference in the objectives of these two programs is in the scope of their operation. The price support program has aimed at supporting the general level of milk prices throughout the country, doing so through the purchase of manufactured dairy products. Inasmuch as manufactured dairy products are both the outlet for excess milk supplies in fluid milk marketing areas and a factor in most fluid milk price formulas, this program has tended to support prices in both fluid and manufacturing milk producing areas. The milk marketing orders program is more local in orientation with the Secretary of Agriculture directed by law to establish the smallest possible areas practicable as the scope of individual orders. The marketing orders

1/ The term political is used here to denote the interaction of the differing economic or social objectives of various interest groups directly or indirectly concerned with dairy policy and does not relate to partisan activities of political organizations.

program has been used primarily to establish prices for milk used for fluid consumption in and around major metropolitan areas. In addition to its general price stabilizing objective the orders program has attempted to solve many of the unique problems associated with the marketing of fluid milk around these complex metropolitan markets.

The nature of the economic problems which gave rise to both of these programs has not changed greatly in the 30 years these programs have operated. But the operation of the price support program and the milk marketing order has diminished the magnitude of these problems to a considerable degree. The producers of manufacturing milk have been assured of prices perhaps at a minimum 15 to 20 percent higher than might have prevailed in absence of price supports. And fluid milk producers around metropolitan markets have had little concern over finding regular outlets for their milk because the surplus pooling arrangements of the marketing orders have maintained a high degree of regularity and order in these formerly chaotic markets.

But as with most economic institutions there is always a desire to improve their performance and to seek solutions to the problems encountered in their operation. This has been the focus of the dairy policy debate in recent years--a search for ways to improve upon the existing programs. In the case of the price support program, experience has indicated that the price support level can not be held significantly above 75 percent of parity without encouraging production of substantial added quantities of surplus dairy products and increased Government expenditures for the purchase and disposal of these products. Yet at 75 percent of parity, the average income of dairy farmers remains lower than might be desired. The desire to further improve the level of dairy farm income has fostered a continuum of discussion and proposed means whereby prices might be supported at a higher level yet without resulting in burdensome surpluses. There has been less inclination to amend the Agricultural Marketing Agreement Act for the purpose of raising milk prices as producers in marketing order areas, desiring higher prices, have generally joined in support of changes in price support legislation. Furthermore, prices in many marketing order areas have been high relative to the prices for manufacturing grade milk causing less inclination on the part of producers under those orders to seek higher prices. With respect to other provisions of milk marketing orders, which relate to the orderly flow of milk in and around a given marketing area, there has in the past been a high degree of producer satisfaction with the performance of this program and in fact a reluctance to see any amendments to the law because of the complexity of the regulations upon which this program is based and the need for preserving intact those provisions which have been tried and sustained in the courts. There has, however, been some recent concern over increases in surpluses under certain milk marketing orders and the need to take action to prevent surpluses from depressing the structure of prices which these orders have maintained.

In short it might be said the objective of recent dairy price support proposals has been to find means of further improving the income of dairy farmers yet avoid the problems of excessive surplus which have been experienced under the present price support law. And further, to preserve the effectiveness of the Federal milk order program in maintaining order in the marketing of fluid milk to the extent such may be jeopardized by increasing surpluses in certain of these orders.

But it should not be assumed that just any combination of economic and legal devices which might accomplish those ends will be acceptable to the dairy industry. The first annual report of the Agricultural Adjustment Administration published 30 years ago stated with respect to that agency's progress on dairy programs:

> "The complex nature of this vast and widely and scattered industry, involving many human and seasonal uncertainties and interrelations with other grand divisions of agriculture, made the task of restoring

it to economic health exceedingly difficult. Divergent and often contradictory points of view in different divisions of the industry complicated the problem." 2/

In these respects the dairy industry has changed little in 30 years. Annually, for more than 10 years now, new dairy legislation has been brought before the Congress with one or more major farm groups urging the adoption of significant changes in the present dairy price support law. And for the past 4 years such legislation has had the support of the administration. Yet there has been no significant amendment of either the dairy price support provisions of the Agricultural Act of 1949 or in the milk orders section of the Agricultural Marketing Agreement Act of 1937.

The reasons for these continued failures to enact dairy legislation are not entirely clear, but it would appear the reason lies, in part, in the type of proposals which have been put before the Congress during this period. A succession of what has come to be characterized as "National" programs has been developed and presented, each seeking to improve program performance in three different areas at a highly aggregated level. The three areas in which improvement has been sought are: 1) Higher national average milk prices, 2) lower Federal Government expenditures for dairy price support and, 3) minimization of the problems involved in storage and disposal of surplus dairy products--notably of butter. Though differing in detail each of several programs have proposed to establish a national milk marketing allotment which would be apportioned among producers according to their level of marketings during some historic period. These programs would have placed either some limitation on the amount of milk which individual farmers might market or a penalty on marketings above certain levels. The limitations or allotments or producers would have been allocated on like basis to producers in fluid and manufactured milk markets and to producers in all regions of the country.

The congressional reaction to these programs gives some indication of the types of diversity to which the AAA Report referred 30 years ago. There is no way of knowing in quantitative terms what proportion of dairy producers in the country might subscribe to each of the different objections which have been raised to these programs, but it is apparent the political strength of various views is great and sufficient to prevent the enactment of such programs. The following are some of the major objections which appear to have been important in defeating these legislative proposals.

1. The income problem of dairy farmers is not entirely a matter of price. At present levels of milk prices some dairy farmers do feel that they are making adequate incomes. These producers are generally in a larger size class than the average milk producer and feel that other producers could solve their income problems by increasing the size of their dairy operation. These producers not only lack enthusiasm for programs to further increase prices but generalize that any program which might place a restraint on other dairymen following their example would be unwise.

2. Many farmers, and particularly younger farmers, who see some opportunity for increasing their income through expanding the size of their farm seem to feel their income gains would be greater from expansion than from the price increase they might get through a change in support program. Further, they tend to feel that any program involving allotments or quotas would either impede or diminish the profitability of such farm expansion.

2 Agricultural Adjustment--A Report of Administration of the Agricultural Adjustment Act May 1933 to February 1934. United States Department of Agriculture, February 1934.

3. Some farmers, but more particularly processors of dairy products, have expressed fears that further increases in the price of milk, and particularly in the price of milk-fat products such as butter, will have an adverse effect on the demand for these products.

4. In some States milk prices are established through State milk commissions with State milk marketing orders already limiting the quantity of milk a producer can market. Producers in these States have argued they do not want a national allotment or quota system imposed on top of their State program under which they have already cut back on their surplus milk production.

5. In certain fluid milk marketing areas, producers, through their own bargaining associations, have achieved some premiums over the prices which have been established under Federal programs. Producers in these markets would appear to prefer Federal actions which would bolster their local bargaining power rather than have their supply and price situation managed on a national basis. To these producers, organization on a local basis is both a tradition and a matter of day-to-day importance in servicing their needs on a particular market. They would prefer to see actions which would preserve and strengthen this local organization rather than minimize its importance. While these producers are not necessarily opposed to national programs they tend to be less than enthusiastic about them.

While the quest for dairy legislation over the past 10 years may have been a fruitless effort, in terms of legislation obtained, the experience has at least served to identify many of these economic and political restraints which have a strong bearing on the legislative prospects of any dairy policy proposals. It would appear that the future dairy policy course selected, must, in addition to being certain of obtaining its economic objectives, also avoid conflict with most of the above political impediments which past programs have encountered.

It is perhaps appropriate at this point to suggest that it may not be possible to find a set of program mechanics which will at the same time do an effective job of improving milk prices without incurring excessive surpluses yet avoid strong political opposition on one or more of the above grounds. The experience over the past 2 or 3 years with compromise programs certainly offers little encouragement to those strongly interested in new dairy legislation. The so-called voluntary programs which were designed to avoid conflict with producers who might wish to expand their production rather than receive a higher price seem to be able to offer this freedom only at great sacrifice in both the degree of income benefit to cooperating producers and in the administrative soundness of the programs. Specific programs will be discussed in a later section of this paper, but the point is raised here in order to suggest that the consideration of future dairy policy cannot be limited to means of attaining higher milk prices but must include other means by which the income of dairy farmers might be improved.

A paper of this type can not deal with all variables which may affect future dairy farm income. It would be impossible to cover all of the various actions which the Government might take to increase the mobility of farmers to move into other occupations. Yet such programs, if effective in moving low income dairy farmers into higher income occupations, are certainly an alternative to programs to increase dairy farm income through higher milk prices. Further, should it prove impossible to pass the legislation necessary to provide higher milk prices, programs in other sectors of the economy may be the only good alternative. Over the longer run, it would seem greater attention should be given to programs which would increase the mobility of resources flowing out of not only dairying but agriculture in general provided satisfactory alternative employment can be found. Over the short-run there is considerable merit is using price supports to increase dairy farm income. It is a positive and direct means of alleviating the imbalance which low dairy farm incomes cause and in the absence of good alternative employment opportunities it helps in avoiding the adjustment hardships which dairy farmers would otherwise face. But in the longer run

there are certain disadvantages in maintaining prices at any higher level than is absolutely necessary, both to the dairy industry and society as a whole. A high price policy is detrimental to society when it tends to hold resources in dairying that might be more productively employed elsewhere--assuming that productive employment could be found or created elsewhere. The dairy industry itself may also suffer over the longer run to the extent that high prices might encourage the development of substitute products and reduce the demand for dairy products. This has already happened in the case of butter and conceivably could happen for most other dairy products.

Dairy Policy Alternatives

It would be impossible in a short paper to attempt to describe all of the variations of dairy price support programs which have been suggested or which might be devised to deal with dairy price and income problems. Thus the following discussion has been limited to those policy alternatives which would appear relevant to current policy considerations. Also the alternatives presented are cast in rather general categories for analytical purposes with little attention given to administrative details or to combining two or more approaches into a single program.

The program alternatives are presented in three groupings with the first being those which have had some wide previous discussions and thus need not be treated in such detail. The second grouping contains a somewhat less widely discussed approach. The third section presents two minor policy courses which would not affect the major price-income problem directly, but which still may have some long-run implications in this area. These latter proposals might be considered in conjunction with or in the absence of action in any of the other alternative areas.

Recent Program Proposals

Over the past 3 years dairy price support proposals of five different types have been introduced in the Congress and widely discussed within the dairy industry. While the Congress chose not to enact any of these proposals into law, they all may be considered as possible program alternatives as various groups continue to support these approaches or some variation of the original approach which would be comparable in its effect. These major program alternatives include: 1) Variations in the support level under the present type of program, 2) supply management with quotas or allotments, 3) voluntary surplus adjustment programs, 4) Class I base programs in Federal orders, and 5) subsidy programs involving Government payments. An analysis of each of these program alternatives was the subject of a recent analysis prepared by three Extension specialists from land-grant universities. The report of this group presents a far more detailed analysis of each than is possible here. 3/ The following analysis presents only a brief description of each alternative along with some comments as to the type of performance that might be expected.

Variations in the Current Commodity Purchase Program:

The present dairy price support program is about as efficient administratively as any program that could be devised and, in terms of achieving the objective of establishing a certain and stable level of milk prices, as effective as could be desired. The Commodity Credit Corporation extends an open offer to buy any quantity of certain major manufactured dairy products at prices which are equivalent to the support

---

3/ An Investigation of the Dairy Problem and Analsysis of Selected Program Alternatives. Robert Story, Cornell University, Glynn McBride, Michigan State University, Truman Graf, University of Wisconsin. Department of Agricultural Economics, New York State College of Agriculture, Cornell University, September, 1963.

price for milk which it is desired to maintain. Milk processors then have the alternative of selling these products to the commercial trade or to the Commodity Credit Corporation. If commercial channels offer a price equal to or higher than the Commodity Credit Corporation price the product will go into commercial channels. But when commercial channels are not willing to purchase at these prices sales may be made to the Commodity Credit Corporation rather than accepting lower prices from the trade. The program relies upon competition for milk supplies among milk processors to make certain that producers receive the support price. While there is some regional variation in the resulting milk prices paid to farmers, in general the performance of the program in this respect has been good. Such variations in producer milk prices as have been observed are largely the result of variations in the efficiency of milk assembly and processing and not due to a lack of competition for milk supplies.

But from time to time this program has encountered difficulties with high CCC expenditures for dairy price support and in finding disposal outlets for the dairy products acquired. Over the period January 1, 1949, through April 1, 1964, the average annual expenditures for dairy price support have been about 310 million dollars. But in certain years, expenditures have far exceeded this level. In 1953 the total dairy program costs were in excess of 585 million dollars, and during 1961 marketing year expenditures approached 600 million dollars. As might be expected, during periods when price support levels have been held at relatively high levels, producers have responded with high levels of output and both program costs and surplus handling problems have increased. During periods when price support levels have been held at 75 percent of parity, program costs have declined toward or even below the 300 million dollar level.

Past experience seems to have ruled out proposals for high support levels under this program but from time to time there have been proposals that the present minimum support level of 75 percent of parity be lowered. The objective would be to lower prices to somewhere closer to an equilibrium level, so as to further reduce surpluses and Government expenditures.

A lower support level would discourage some milk production and program costs and surplus handling problems would be lessened. It is difficult to estimate how much farmers might reduce milk production in response to a lower price, as such factors as beef prices, feed prices and pasture conditions must also be taken into consideration. In the first year after a support reduction it is not likely that a great reduction of supplies would be noted, though in subsequent years some response would be expected. For each billion pounds of reduction in surplus, the savings to CCC would be approximately 35 million dollars.

The most significant effect of a reduction in support level would be on the farm income side. Here it has been estimated that a reduction of 5 percent in the support level might reduce net dairy farm income from 45 to 100 million dollars. It is argued by some, that after a brief period of adjustment, supplies of milk would decline and prices would again rise. Those dairy farmers efficient enough to withstand the adjustment would then be in a more favorable income position. Whether this would occur, however, depends largely on the alternatives open to dairy farmers. If support prices on other farm commodities were not reduced proportionately, resources from dairy farming might transfer to other farm enterprises. But if prices for all commodities were reduced, the adjustment would have to come from transfers into other sectors of the economy. Unless effective steps were taken to increase job opportunities outside of agriculture, the possibilities of this type of adjustment would not be great and a likely result would be a prolonged period of lower milk prices and lower dairy farm income.

Supply Management Programs with Quotas or Allotments:

From the mid-1950's through 1962 numerous proposals for national supply management programs involving allotments or marketing quotas for milk were developed. While differing somewhat in administrative framework most of these programs were similar in mechanics. They provided for the Department of Agriculture making an estimate of national demand for milk and dairy products and translating this into a national marketing allotment. This in turn would be allocated to producers on the basis of their prior marketings of milk or cream. The objective of such programs was to provide a higher support level than has been maintained under the present price support program but, through the use of allotments or quotas, to discourage the production of excessive quantities of surplus that have previously inflated program costs and resulted in excessive Government stocks of butter and other dairy products. From a gross performance standpoint--in terms of total net income to dairy farmers, Government costs and surplus handling problems--most analysts agree that a program of this type would be effective. It would be possible to reduce program expenditures to almost any desired level through penalties to discourage the production of surplus milk and through CCC paying a very low price for the surplus products acquired. Surplus handling problems would also be reduced to a minimum. Dairy farm income could be increased through higher milk prices though there is undoubtedly some upper limit to the amount of price increase which could be maintained without encountering an adverse demand trend. The demand for milk products in the aggregate is probably quite inelastic in the short run and a 15 to 20 cent or even greater increase in milk prices would result directly in increased net income for dairy farmers. But over the longer run the demand for milk and dairy products might become less inelastic though no one can say for certain the extent to which substitute products might be developed in the future.

The major problem encountered by this type of program, when submitted to the Congress, grew out of its highly aggregated objectives as discussed in the earlier part of this paper. When the original version of the Agricultural Act of 1962 was presented to the Congress with a proposal for this type of dairy program, dropping off of the dairy section of that bill was one of the first actions taken by the Senate Agricultural Committee. The response of the various dairy organizations at that time was, in essence, that their membership would prefer to continue with the present program at minimum support levels rather than accept this type of supply management program. This position seemed to be based on the assumption that the present price support program could be continued at minimum support levels. Unless circumstances change so as to indicate that continuance of the present program is not a real alternative, it would not seem that a supply managment program with quotas or allotments, if proposed again, would fair any differently.

Voluntary Surplus Adjustment Programs:

Following the strong objections to the "mandatory" supply management program in 1962 considerable attention was given by both the dairy industry and the Department of Agriculture, to development of voluntary programs which might both reduce the then excessive level of dairy price support expenditures by the Commodity Credit Corporation and still provide cooperating farmers with a somewhat higher level of price support or income benefit than provided by the current program operating at 75 percent of parity. Various program alternatives were developed over the next year and a half, some of which involved payments to dairy farmers on the amount by which they reduced their marketings below the level they marketed in a prior period and others which would have made payments to farmers on the amount of milk they marketed provided they marketed something less than the quantity of milk they marketed during a prior period. In addition to being termed voluntary programs these proposals were also referred to as "emergency programs" in the sense they were advanced as a means of reducing both the butter stocks which had reached the limit of storage capacity and also the high level of price support expenditures at that time.

The logic of these programs was that by making a payment of $1.00 or $2.00 per hundredweight to discourage farmers from producing surplus milk, the Commodity Credit Corporation might avoid an expenditure of about $4.00 for buying and handling the products of 100 pounds of milk after it was produced. On the farm income side the farmer would be better off to take $1.00 or $2.00 a hundredweight for not producing 100 pounds of milk than to invest the feed, labor and other inputs to produce 100 pounds of milk which he would sell for only about $3.00 per hundredweight. Two major legislative impediments were encountered with this type of program. The first might be labeled lack of enthusiasm on the part of producers and the Congress because of the minimal income benefits which such a program would provide producers. The income benefits to producers would occur largely through cost savings in milk not produced. Whether these benefits could be achieved would depend largely on whether producers had alternative uses for the feed and other resources which they would withdraw from the production of milk. These benefits were estimated to be in the neighborhood of 40 to 50 million dollars assuming a very high level of cost savings by participating producers. It was estimated that program cost savings to the Government at the level of expenditures prevailing in 1963 would be about 50 million dollars. But again this may have been an optimistic figure as it assumed that nonparticipating producers would increase their production by only an average amount. It is quite possible that the participation in the program would have been highly selective with nonparticipating producers being those who might make larger than average increases in production while among the participating producers may have been those who had no intention of expanding or even had intentions of reducing their milk production and elected to receive payment for what they had planned to do anyway. There is no good way of estimating the degree of slippage that may occur with this type of program for the above reasons or through producers receiving the payment, yet finding ways of transferring their resources so as to keep them in milk production. It does appear probable, however, that some cost savings would have resulted even if not of the magnitude predicted as the difference between a $2.00 incentive rate and a $4.00 acquisition cost for surplus dairy products does contain a generous 50 percent margin for error.

The major limitation for this type of program is that it can offer a significant degree of cost reduction or income improvement only if CCC expenditures are running at a very high level so that a significant amount of money can be transferred from product acquisition cost into incentive payments. With program expenditures running at a rate of 500 million dollars per year, the margin for improvement was substantial. But when program costs are in the range of 300 to 350 million dollars the net effect of such a program on either expenditures or income would be marginal and the risks of poor program performance from an administrative standpoint loom much larger.

Class I Base Programs in Federal Milk Marketing Orders:

Over about the last 5 years, producers in certain milk marketing areas regulated by Federal orders have proposed that the authority under the Agricultural Marketing Agreement Act of 1937 be broadened to permit the inclusion of base or allotment plans in Federal milk marketing orders. Currently the Federal Milk Marketing Orders establish different prices for milk going to different usages. These orders have two or more class prices with the highest price or Class I price being the price for milk used for bottling purposes and a lower price for milk in excess of bottling requirements and which is processed into manufactured dairy products. In the payment of producers under these orders, the proceeds of sales in all classes are added together and divided by the total quantity of milk delivered by producers to arrive at an average or blended price. All producers on the market receive this same blend price irrespective of the use made of their individual milk. This device has served well to prevent seasonal or annual surpluses from drastically lowering prices to producers and avoid having handlers cut off from the market, producers whose milk may not

currently be needed. This system of pricing has established a degree of regularity and order in markets where very chaotic price and marketing situations previously prevailed.

But the payment of a blended price for all milk is alleged to provide an over incentive for the production of additional surplus milk. The base plan proposal would permit the payment of a Class I price to each producer on the proportion of his milk determined to be needed for bottling on his market and the lower manufacturing price on any added surplus he might market. The intent of this plan would be to discourage or at least provide less incentive for the marketing of surplus milk. The proponents of this program have indicated it would help to reduce the national dairy surplus to the extent it reduced surplus production of those markets, where the plan might be used. On the other hand persons outside these markets have been somewhat less enthusiastic indicating that the income and program cost saving effects of such a program would be almost insignificant from a national standpoint. Cost savings of this program were estimated to be about 30 million dollars. The net income benefit to farmers nationally would be only 5 million dollars and accrue only in those markets where the plan operated.

But one of the major objectives of this program appears to lie outside of the area of prices established by Government programs. In a number of Federal order markets, producer organizations have been successful in negotiating premiums over the Class I prices established by the orders through bargaining with handlers. The major bargaining strength of these producer groups lies in their willingness to assure handlers of an adequate supply of milk at all times in exchange for their agreement to the premium prices. But during the period these premium prices have existed, surpluses have continued to increase in these markets. The concern of handlers over having an adequate supply of milk has become less and less and correspondingly the bargaining position of the producers associations has become less secure. There would appear to be some hope that through the use of this type of base plan further increases in surpluses might be forestalled, thus preserving the bargaining position of the producer cooperatives.

The major argument in opposition to such base plans has come from producers in States with large quantities of milk going into manufacturing usage who fear the bases might become a barrier to entry and prevent them from realizing aspirations of shipping greater quantities of milk to distant markets for a higher return. Whether these fears are well founded or not depends on the manner in which base plans might be written. Increases in surplus on a given market can come from two sources: 1) Regular producers on the market increasing the size of their deliveries, or 2) new producers coming into the market. A base plan could be written which would effectively limit expansion by producers on the market without limiting entry. This would appear to be the intent of the bill which passed the Senate in 1963 (S1915). Under this type of base plan, producers desiring entry would appear to have little to fear. But if relatively free entry is not assured in the enabling legislation, a base plan could become a barrier to entry. This it would seem would be undesirable both to producers on the outside and to the general public. Such restrictions could prevent the most efficient producers from bidding for sales in these markets thus limiting their economic opportunity and force consumers to pay higher prices than necessary for their milk.

Subsidy Programs with Government Payments:

The downward trend in butter consumption since World Was II has been a particular cause for concern in the dairy industry. The per capita commercial consumption of butter in the United States has dropped from 16.7 pounds in 1940 to 6.4 pounds in 1963. Various measures have been considered to stop or reverse this trend in recent years. One prominent proposal is to reduce the Commodity Credit Corporation purchase

price for butter so as to lower its market price and make cash payments to farmers, either directly or through processors, in order to maintain the farm price for milk at or above present levels. This approach has gained impetus over the last 2 years following the establishment of such a program in Canada.

The major problem in evaluating this program is the lack of information on the characteristics of the demand for butter. In recent years there has been very little variation in the price consumers have paid for butter, because of the stable price situation created by the price support program. As a consequence there has been no opportunity to observe how the consumer responds to changes in price. Various hypotheses have been presented, some reasoning the demand for butter must be elastic, others reasoning that it must be inelastic. But in the absence of actual observation these estimates are only conjecture. Those reasoning that it is elastic suggest that obviously if the price of butter is lowered to a point where it is more competitive with substitute products consumers would elect to switch back to butter. On the other hand, it may be reasoned the price difference between butter and the substitute products is so great that even at the 10 to 15 cent lower prices which might be established through a subsidy program, butter would still not be competitive with the substitute products. Furthermore, a large portion of butter sales are to restaurants and institutions which would likely be unresponsive to price changes.

If the demand for butter is elastic, the percentage increase in butter demand would be greater than the percentage reduction in price, hence the cost of a subsidy program would be less than the cost of the present surplus removal program. But on the other hand, if the demand for butter is inelastic, the subsidy program would substantially increase costs over the present program. The situation is further complicated by the fact that butter can be substituted as a raw ingredient for other dairy products which might have demand characteristics different from those of butter. In particular butter may be used for the manufacture of ice cream in lieu of cream which would extend the subsidy to ice cream. Analysis of the Canadian experience is of little value with respect to what the United States experience might be because the Canadian program started off with a per capita consumption of butter more than twice the level which presently exists in the United States, and further the Canadian program has encountered substantial substitution of butter for cream in the manufacture of other products, obscuring the amount of demand response the program may have caused.

A number of estimates have been made on the possible performance of a butter subsidy program by persons who work closely with dairy consumption statistics. While these estimates are little better than guess work they are the best estimates we have. The results of these analyses would indicate that a program subsidizing the price of butter from 10 to 15 cents per pound would probably increase dairy price support program costs by as much as 100 to 200 million dollars. Inasmuch as these proposals do not contemplate any increase in the support level to be received by farmers, they would have only a negligible effect on dairy farm income. Assuming, however, that butter consumption would increase somewhat under such a program, the problems of handling and storing surplus butter would be diminished.

It has also been proposed that payments to farmers be substituted, in part, for price supports or made in addition to price supports to increase dairy farm incomes. The analysis of such proposals runs very similar to the analysis of a butter subsidy except that the demand for all dairy products is probably more inelastic than the demand for butter or milk-fat products. Consequently as against the alternative of actions to increase prices, such payment programs would be proportionately even more costly per dollar of income benefit given to dairy farmers. At times such proposals have been defended as being consumer subsidies inasmuch as they reduce the price consumers pay for food. But it is questionable whether this is a valid case in support of such payments as in the final analysis, consumers, through their tax

payments pay the total cost and in effect are denied an element of choice in their food selection. In this respect, payment programs can be viewed as coercing consumers rather than subsidizing them.

A New Approach

One approach to supporting producer milk prices which has been discussed very little in recent years would involve more extensive use of the milk marketing orders authority under the Agricultural Marketing Agreement Act of 1937. This approach would not require new legislation but would involve extension of the milk orders program to cover all manufacturing grade. milk in addition to the present coverage of fluid milk marketing areas. While milk marketing orders in recent years have been restricted in their usage to stabilizing conditions around fluid milk markets. The authority of that law does not limit the use of marketing orders and agreements to that purpose. It may be recalled that marketing agreements did exist for evaporated milk and for dry skim milk during the 1930's.

A marketing order could be used in conjunction with the present dairy price support program to accomplish certain objectives which the present price support law is not flexible enough to cover. The mechanics of such an order might be as follows:

1. A marketing order might be promulgated to cover all handlers purchasing milk from farmers not now covered by separate fluid milk marketing orders. (There would be no need for duplicating the regulation that exists in present orders nor in destroying these instruments which are so well tailored to the conditions of each separate fluid milk market. To the extent interrelations might be necessary between the proposed order and these existing orders, coordinating provisions permitting transfer of funds and a division of administrative authority might be provided in the separate orders.) The pricing objective of the proposed order would be to assure that all handlers purchasing milk from farmers for use in commercial channels paid at least the announced support price for that milk. The order would have two price classifications; one for milk sold to commercial channels--the support price--and another for milk sold to the Commodity Credit Corporation as surplus--the CCC or surplus price.

2. In order to stay within some Government cost limitation the lower class price--the price to be paid to farmers for milk sold to the Commodity Credit Corporation--would vary monthly according to the quantity of surplus acquired by CCC. For example, if the annual Government cost objective were to not exceed 300 million dollars, and CCC purchased dairy products equivalent to 10 billion pounds of milk, assuming a processing and a CCC operating cost margin of about $1.00 per hundredweight, farmers would net about $2.00 per hundredweight on all milk sold to CCC.

3. A pooling arrangement could be operated under the order, similar to the pools under the fluid milk marketing orders. The proceeds of sales by all handlers to commercial outlets at the support price and to the Government at the CCC price could be totaled and divided by the quantity of producer milk to determine a blend price which would be paid to all producers. Equilization payments could be collected from or paid to handlers according to whether their sales were to commercial channels or to the Government in order to enable all handlers to pay producers the blended price.

4. The administration of the order might be vested in a producer advisory committee as is authorized under the Marketing Agreement Act and currently used in fruit and vegetable orders.

5. The flexibility of the Marketing Agreement Act would permit the dairy industry to adjust various product prices according to recognizable demand trends

much as has been done with multiple class prices in fluid milk markets. For example, handler obligations for fat and nonfat solids might be varied so as to accomplish the same effect as a butter subsidy without reliance on Government payments.

The following are some advantages that might be listed for this type of program.

1. A higher price support level might be established without concern over rising Government expenditures as it would be possible to control the level of expenditures by varying the level of the surplus or CCC price. Also some control could be exercised over surplus handling problems by varying the price of milk used in individual products so as to stimulate consumption or encourage production adjustments. This could be accomplished without the need for new legislation as the present law authorizing marketing orders would seem to be adequate. And as long as the blended return to producers did not fall below 75 percent of parity this would seem to be consistent with the directives of the Agricultural Act of 1949.

2. Under the marketing order procedure, needed changes or amendments in the program could be accomplished through the hearing process, avoiding the extended partisan debate that has characterized all agricultural program changes of recent years. Program changes could be made when timely from the standpoint of program operations rather than being forced to follow the time schedule of congressional sessions.

3. The use of an administrative committee to administer the program and to recommend amendments and possibly even exercise some discretionary authority would give the industry both a greater opportunity and responsibility to deal with its own problems and to participate in and contibute to the decision making process.

As with most new program proposals which have not been the subject to extensive public discussion, it is always easier to see the advantages than to anticipate the problems. But one major problem with this approach does occur. In undertaking a marketing order procedure of this scope it is possible the hearing procedure could become quite extended and unwieldy. The extent of this problem would probably depend upon the degree of producer support and understanding that existed prior to the calling of the hearing. Because of this potential problem it would seem that an approach of this type probably could not be successful unless there was a strong perponderance of support among producers for any proposal on which a hearing might be held.

Some Minor Program Actions

The following are two suggested policy actions which might be considered by the Department of Agriculture, irrespective of whether major action on dairy price supports is taken or not.

As was indicated earlier, the declining trend in butter consumption has been a major problem to the dairy industry for a number of years. There has been considerable discussion of the need for some readjustment in the relative prices of fat and nonfat milk solids as a result of this trend both from the standpoint of attempting to curb the decline and to encourage adjustments in milk-fat production so as to bring fat and nonfat solids production into balance with the expected ratio of their demand in future years. But the relative prices of these two components of milk are presently frozen by the requirement in the Agricultural Act of 1949 that the price of both milk and milk-fat be supported at not less than 75 percent of parity. In view of the down trend in fat demand and the gradual rise in demand for nonfat solids it would seem this price relationship might be altered in the near future so as to

permit gradual adjustment to what is likely to occur in the future. It would seem quite unwise to wait until the problem of imbalance reaches critical proportions at which time it would be too late to make anv smooth or effective adjustments.

A second area which might be studied for possible action is how farmers might be encouraged to make desirable adjustments in their farm operations which would help to avoid excessive production and improve their individual income situation. Specifically the dairy herd improvement program has been very successful among that group of farmers who are dedicated dairymen and interested in upgrading and improving their herds. It has certainly helped this group of farmers to evaluate their performance and make more rational decisions. But the participation in this program is largely among that group of farmers who are aware of the importance of productivity in determining their net income. It has been suggested that an extension of this program to include much larger numbers of dairy farmers, and particularly those whose herds may be marginal in productivity, might help to precipitate decisions that certain cows or even certain herds are unproductive and cannot produce an adequate net income for the operator at any milk price. It would seem this question might well be pursued first from an analytical standpoint to determine how this program, if extended, might affect both the income of dairy farmers and the total production of milk and secondly by what means it might be most effectively employed to accomplish these ends.

SUMMARY

The above listing of alternative policies is not exhaustive nor does it treat all variations of these particular programs. But the programs presented do seem to be the more obvious alternative which might be considered at this time and the analysis attempts to point out some of the significant characteristics of each alternative which may have an important bearing on its acceptability as a part of our public policy. As a final note it should be kept in mind that many of the circumstances which may influence selection of a given program are highly variable and the desirability or feasibility of any particular approach depends very much on the political and economic circumstances at the particular time when a decision must be made. Of particular significance to the analysis presented in this paper is the assumption that the present price support program can continue to operate at about the present level of support and also that the milk marketing order program will continue to operate effectively to stabilize conditions around the fluid milk markets. Should either of these circumstances change, it might have a great bearing on the judgment of whether a particular approach might gain industry or congressional acceptance.

MEAT ANIMALS

V. James Rhodes and Charles L. Cramer

INTRODUCTION

Meat animals are feed processors, and national feed grain policies are very important to the short-term welfare of meat animal producers. However, the Calfifornia commercial cattle feeder is influenced considerably differently by a given feed grain policy than the Texas rancher or the Iowa feeder who raises his own calves and feed grain.

This paper is confined to domestic production and markets. The Commission might consider the advisability of a special study of world supply and demand for meat animals for the period of 1970 to 1980. Expanding populations and incomes in the northern hemisphere are going to expand greatly the demand for meats. Feed grains are going to be increasingly important in producing that additional meat. The comparative advantages of this Nation in producing both meat animals and feed grains from 1970 to 1980 need close examination. Our national export policies concerning the relative prices at which we export meats and feed grains should be examined in terms of the market potential seen in the 1970-1980 period.

Breimyer 1/ commented in 1961 that "the apparent relentless tendency of the marketing margin to widen" is the only discouraging factor in the future economic position of meat animals. While concurring with his concern, we have left the margins problem to the national commission on the subject.

Cattle Situation

The postwar cattle situation reflects several changing forces: 1) The great postwar expansion in demand and production have made cattle the outstanding success story of agriculture; 2) the ups and downs of fed cattle marketings and prices have been added to the conventional cattle cycle; 3) the expansion in feed grains and reduction in their support prices have changed considerably the economics of the cattle business; 4) the reduction in horses, mules, and dairy cows on farms has released millions of animal units of feed for beef cattle.

This part of the paper emphasizes the relation of feed grain prices and supplies to the cattle business. We begin with these propositions:

1. Cow-calf operators are grass producers and grass processors. (The term cow-calf operators is used rather than ranchers because 62 percent of the beef cows are now found east of Texas and the Great Plains.)

1/ Breimyer, Harold F.: Demand and Prices for Meat, Econ. Res. Ser., U.S. Dept. of Agri., Tech. Bull. No. 1253, December 1961, p. 4.

2. Cattle feeders are grain and forage processors, sometimes grain producers, and almost invariably forage producers, except in the West.

3. Presently, forage (pasture, hay, and other roughage) and feed grains bear a largely complementary relationship in the cattle business. The cow-calf operations depend mainly on forage and the fattening operations depend mainly on feed grains.

<u>Feed supplies and the cattle business</u>.--Feeder cattle production and prices are higher now than they would have been had not feed supplies increased and feed grain prices declined during the postwar period. Since the effects of changes in feed grain prices can be lost so easily in the ups and downs of the cattle cycle, these effects are outlined in isolation.

Increased supplies and lowered prices of feed grains have effects that we can usefully seperate into 3 stages:

Stage 1 (the first couple of years when cattle numbers have not yet responded):

....Cheaper feedlot gains make cattle feeding more profitable.

... Cattle feeders bid up feeder cattle prices because of profit prospects.

... Feeders who are also grain producers have less income from grain production but more from grain processing (i.e. cattle feeding).

... Cow-calf operators benefit from higher prices for feeder cattle. There is some tendency for feeder cattle to be purchased at lighter weights; but there is little of this until calf numbers expand, becasue of the very low opportunity cost of the pasture and forage possessed by the cow-calf operators. A higher proportion of all available calves are being fed rather than being slaughtered as veals or calves.

Stage 2 (the cattle-expansion stage):

... More feeder cattle on farms leads to a bidding down of prices.

... More fed beef lowers farm price and retail price of fed beef, which further reduces the prices that feeders are willing to pay for feeder cattle.

... Feeders are usually hurt by declining prices of their sizable inventory of cattle on feed.

Stage 3 (the new equilibrium after adjustment to the change in feed grains):

...More beef consumed at a somewhat lower price. Assuming unitary elasticity of consumer demand, consumer expenditures are the same as the old equilibrium. Gross farm receipts are lower than at the old equilibrium because of a somewhat inelastic demand at the farm level.

...Net returns to cattle feeders as feed processors are the same as in the old equilibrium; net returns as grain producers are lower. Gross returns to cattle feeders are lower per head of cattle fed because lower feed costs result in a reduced selling price for fed cattle.

...Gross returns to cow-calf operators per head sold are higher than in the old equilibrium (this is necessarily so unless we assume a horizontal LR supply curve which seems a bit extreme, or unless the decline in selling weights offsets the price gain per hundredweight).

...Net returns to cow-calf operators are likely to be improved because the trend it takes to bid up the realized costs of the very sizable land input is quite long since most operators already own the input.

These theoretical results may seem unrealistic because we never observe the effects, in isolation, of a single change. Remember that these effects do not include all of the effects of a typical cattle cycle. As noted earlier, at least three important forces have been at work in the postwar period.

Shift in demand.--Demand for beef has apparently been moving to the right since the mid-1930's. Evidence of a demand shift since 1953 is indisputable: both per capita consumption and retail prices of beef have increased at about 2 percent a year since 1953. 2/ If this shift in demand were to cease, retail expenditures for beef would increase at the same rate as population growth. Compare a population increase of 24 percent from 1950 to 1963 with a 100 percent increase in the retail value of all beef consumed and you get a measure of the importance of this demand shift.

Feed grain supply expansion and price decline.--Beef cattle are now the leading consumers of feed in this country. In 1962, they consumed 38 percent of all feed (measured in feed units of corn equivalents), as contrasted to only 24 percent in 1940-49. The "animal units" (the feed-consuming equivalent of a mature dairy cow) of beef cattle nearly doubled in that period--up from 28.5 million to 52.1 million. This increase was partially balanced by a decline of 8.2 million animal units of dairy cattle and a 7.0 million decline in animal units of horses and mules.

2/ Economic Research Service: National Food Situation, NFS-104, U.S. Dept. of Agri., May 1963, pp. 12-14.

We have been accustomed to thinking of beef cattle as grassburners and of cattle production as tied fairly closely to moisture conditions on the ranges. The upsurge of grain feeding and the eastward movement of cow-calf herds are changing this situation more rapidly than generally may be realized. In 1961 and 1962, only 18 percent of all concentrates fed to livestock were fed to beef cattle. However, of the 19.2 million additional tons of concentrates (measured in feed units) fed all livestock in 1961-62 as compared to 1956-60, 9.8 million, or more than 50 percent, were fed to beef cattle. Another 8.1 million of this 19.2 million-ton increment in concentrates were fed to hogs. The rate of feeding concentrates per animal unit at 0.88 ton for 1963 was the same as the 1958-62 average and close to the high of 0.90 ton fed in 1960 and 1961. The particular rates of response of beef cattle and hog production to the large increase in feed grain supplies of the past few years are striking indeed. We would hesitate to project such rates to further increases in feed supplies. The phase of the cattle cycle and the rise of large feedlots since the mid-1950's undoubtedly have facilitated this tremendous growth in cattle utilization of concentrates. Moreover, the expansion of concentrate consumption by hogs is surprisingly large in view of the relatively small expansion in hog production. However, it seems evident that beef production will expand much faster than pork production so long as consumer demands for the two products change as they have in the past few years. Moreover, any such expansion in beef production will be fueled in the future to a very large extent by increased consumption of feed grains. Only 22 percent of the feed consumed by beef cattle in 1961 and 1962 was concentrates. However, of the 18.1 million tons of additional feed units consumed by beef cattle in 1961-62 as compared to 1956-60, 9.8 million tons, or 54.2 percent was concentrates.

Cattle cycles.--Two important points can be made from figure 1: 1) The total number of cattle on farms January 1 of this year was a record high, 106.5 million; 2) If the present cycle follows the pattern of past cycles, we are close to a downward adjustment in numbers.

Changes in the composition of the cattle inventory may be seen in figure 2. The number of milk animals has decreased since the mid-1940's, while the number of beef animals has risen sharply.

The present cattle cycle is distinguished from previous ones by the large increase in feedlot feeding of cattle before slaughter--about 16 million head in 1963 compared with approximately 7.5 million in 1950. In 1956-58, cattle marketed out of feedlots amounted to 41 percent of all cattle slaughtered. This percentage has increased to about 60 percent at present. Increased feeding results in a shift to higher quality beef with fewer animals being slaughtered as calves, and with steers and heifers being marketed at younger ages. Productivity of the cattle inventory is increased in terms of pounds of meat per head by increased feeding, since more beef is produced per head slaughtered and per cow in the inventory. For example, total beef and veal production in 1963 was 6 percent larger than in 1962, but the number of cattle and calves slaughtered was up only 1.4 percent.

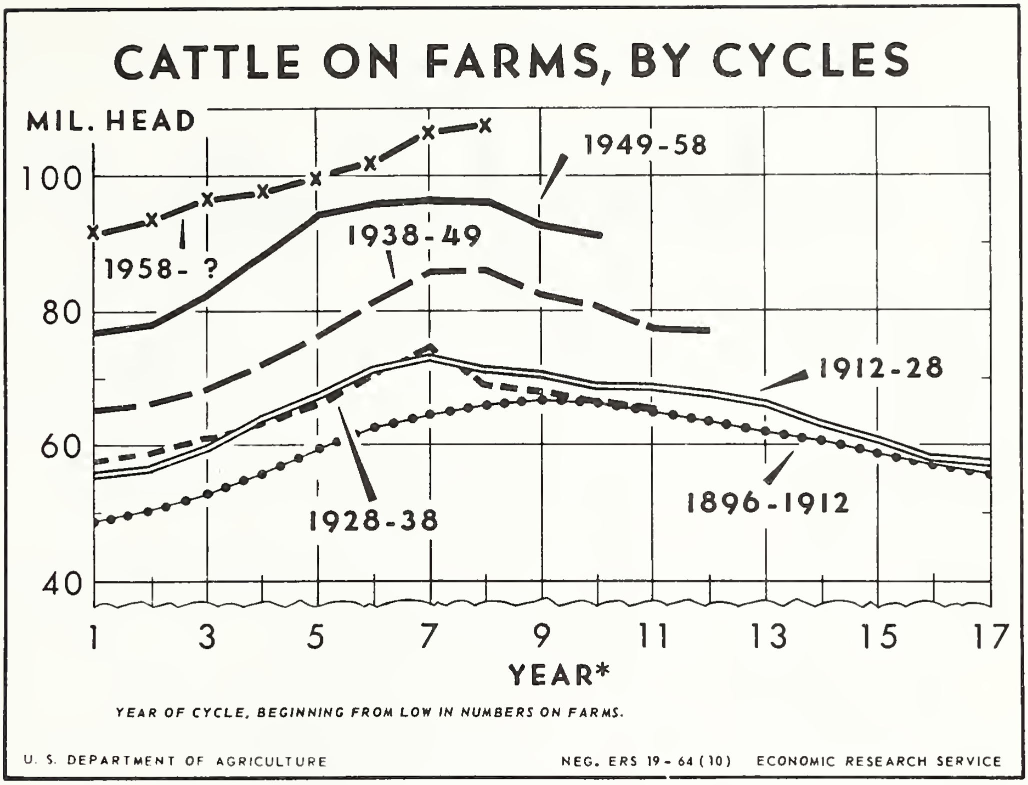

FIGURE 1

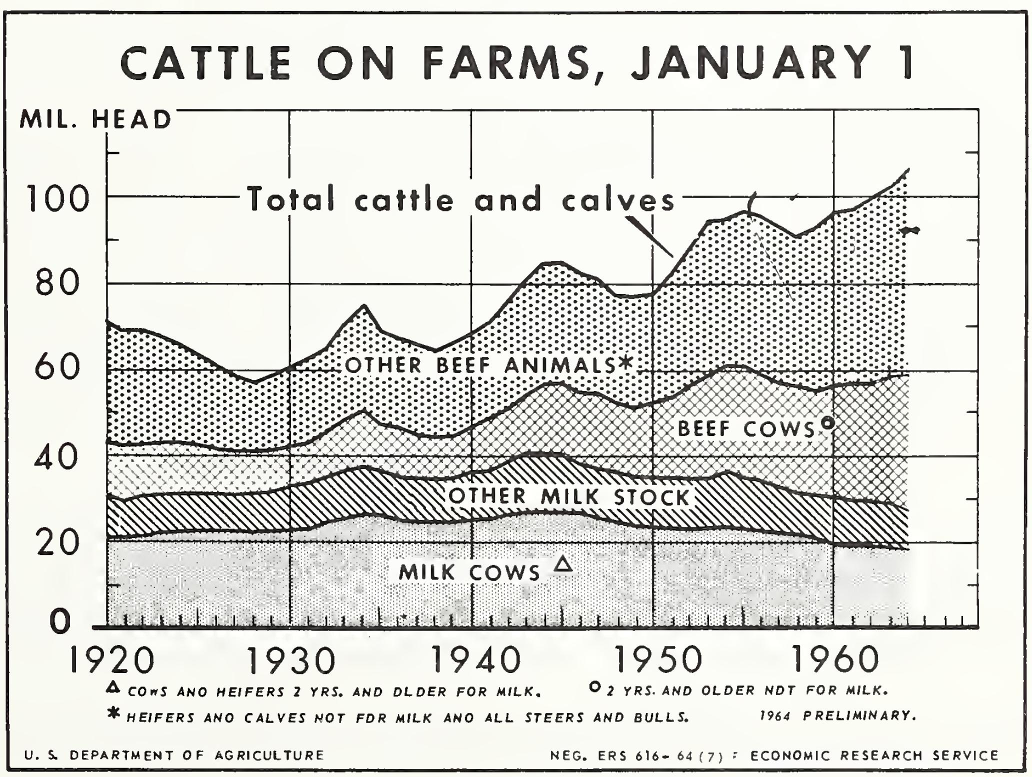

FIGURE 2

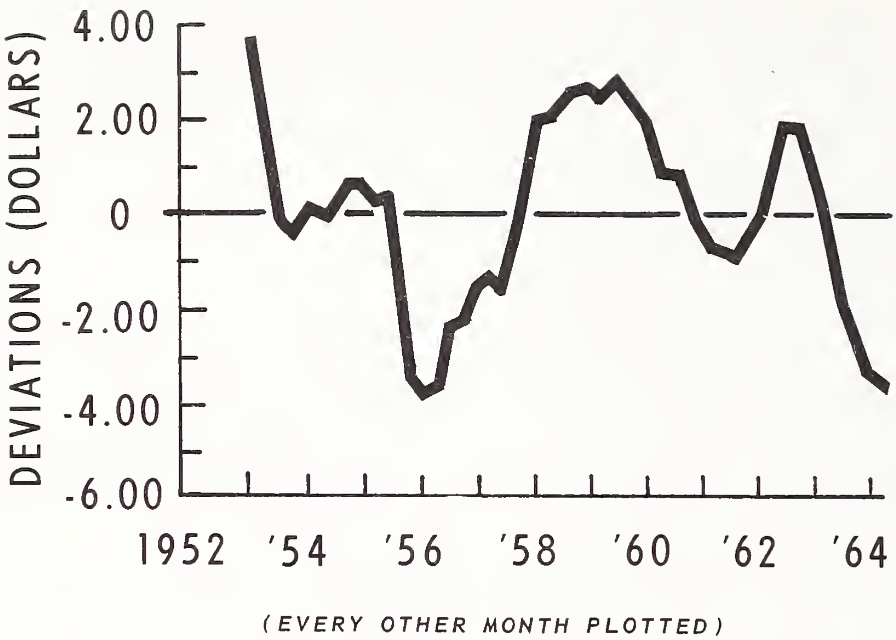

Figure 3. Deviations from the Trend, Choice Steer Prices Chicago from 12-Month Moving Averages, January 1953 to February 1964

SOURCE: U. S. DEPARTMENT OF AGRICULTURE, LIVESTOCK AND MEAT STATISTICS, VARIOUS VOLUMES FROM 1953 TO DATE.

Much of the increased capacity to feed cattle has been in the form of large-scale feedlots. Cattle feeding is characterized by a long production interval with high fixed investment and many independent firms--conditions giving rise to cyclicality. One authority 3/ suggests that presently we may be witnessing a cattle feedlot cycle. The feedlot cycle is in addition to the fed cattle cycle and the general cattle cycle. Fluctuation in fed cattle prices has occurred somewhat independently of the general cattle cycle (fig. 3). Feedlot capacity has outrun both the supply of feeder cattle and the demand for fed beef as measured in 1960-62 average prices. If we are experiencing a cattle feedlot cycle, there is likely to be a period of a few years during which feedlot capacity will be adjusted to available feeder supplies. As part of the adjustment process, many feedlot operators will be attempting to keep their lots in use and will be forced to attempt to minimize losses rather than maximize profits.

While tentative at this point, the feedlot cycle explanation is supported by recent evidence. The price of Choice slaughter cattle dropped sharply for a few months in 1961 because of a bulge in fed cattle marketings. But there was only a small decline in feeder cattle prices and almost no change in cow prices. Fed cattle prices again

3/ Harold Breimyer, Private and Public Implication of Change in Cattle Feeding. Paper delivered at Research Workshop on Cattle Feeding, Denver, Colo., March 16-18, 1964.

declined sharply in 1963, but this decline did not start liquidation of breeding herds. On the contrary beef cow numbers rose 6 percent and exceeded the increase in 1962.

Changes in the amount of fed beef have caused most of the price movement in the past several years. However, cattle prices in the next few years also will be affected by increasing numbers of grass-fed cattle coming to market if the present cattle cycle is similar to previous ones.

This is the seventh consecutive year in the building phase of the current cycle. However, the number on farms will increase only about .5 to 1.0 percent this year--a lower rate than the 2.6 percent average of the previous 6 years. During the early stages of the upswing, prices of all classes of cattle were high and both cow-calf operators and feeders had good opportunities for profits from their enterprises.

The slowing of the buildup is a critical phase. At this point, large supplies result in prices unfavorable to cow-calf operators. Only after cattlemen adjust inventories to better align them with demand will prices increase. Such adjustment is painful to producers since it means unfavorable prices until adjustment is well underway. The effects of cyclical changes on incomes of cattle feeders and upon cow-calf operators differ in the rapidity with which recovery may be made and the timing of the impact. Major income adjustments from cattle feeding can be made in the period of time required to feed a group of cattle--usually less than 9 months. Improvement in income for the cow-calf operator may require 3 years or more, while the general cattle cycle progresses. Since the fed cattle cycle can be thought to move somewhat independently of the general cattle cycle, serious income reduction may not exist in cattle feeding concurrent with cyclically low income for cow-calf operators.

The stage of the cattle feedlot cycle and relative price of feed grains seems important in determining the extent of price declines for feeder cattle in the liquidation phase of the general cattle cycle. If feed grain is relatively cheap, and the feedlot cycle is near its peak in capacity, the reduction phase would likely be shortened and price decline of feeder stock moderated. On the other hand, if the general cattle cycle is in the liquidation phase, if feedlot capacity is increasing, and if feed grain prices are relatively high, very sharp price adjustments appear likely to occur.

Hog Situation

The hog situation has, in general, been remarkably stable for the past 4-5 years. In recovering from the \$12 level of late 1959, average farm hog prices moved above \$15 in March 1960 and ranged between \$15 and \$19 until February 1963. During late 1963 they dropped to \$13.60 in December and the monthly average stayed between \$14 and \$15 through the first half of 1964.

The stability of the hog price situation is due to the relatively stable sizes of the annual pig crops as well as to their relatively even seasonal distribution and resulting slaughter volume.

The hog-corn ratio is still a useful measure of relative profitability of the hog business. However, a much higher ratio is necessary to bring forth increases in production than formerly. Decreases in the pig crop now result from ratios that formerly were not sufficiently low to discourage hog production.

An explanation of the increase in the hog-corn price ratio requires a look at hog production as it is typically carried out in the Corn Belt. (Incidentally, the Corn Belt continues to produce a slightly increasing proportion of the total number of hogs.)

Hog producers usually produce feed grains also. Much of the feed grain fed to hogs is typically grown on the same farm as the hogs. In this setting, at least two types of changes could explain the increased level of the hog-corn ratio: (1) As the cost of corn becomes a smaller proportion of the total costs, the ratio must increase to maintain a given level of profitability of feeding hogs if other costs associated with hog production are relatively higher than the price of corn; (2) as an alternative to feeding hogs or selling grain on the market, feed grain producers have the possibility of delivering it to CCC at a fixed price, which is different from the price generally used in calculating hog-corn ratios. Since 1958, the national average support price has run 6 to 16 cents per bushel more than the season average price received by farmers.

The postwar trend in pork consumption reflects a decline in consumer preference. In 1947-62 the decrease in per capita consumption of pork averaged 0.7 percent per year. The retail price of pork also trended downward, at an average rate of 2 percent per year. The percentage of disposable income spent on pork fell from 2.4 percent in 1952 to 1.6 percent in 1962 and 1963.

Policies

Direct, commodity-type programs for livestock have received only sporadic discussion and have not been implemented. There has been widespread disinterest and even opposition of farmers and cattlement to price supports or other direct programs. While we have not had a problem of continued excess production of livestock products, we do have rather sharp fluctuations in prices and incomes of producers. Loan and storage programs will not work since the product is perishable. Supply management programs have not been seriously considered because of farmers attitudes and the complex administrative problems involved. About the only kinds of programs which appear at all feasible are purchase and deficiency-payment type programs.

Purchase programs are limited by outlets for the commodity. This is particularly true of livestock products. Direct distribution to needy families is hindered by the perishability of meats. Only limited amounts can be used for school lunches and institutions. A major objection to direct payments is their high cost unless there is incentive to reduce production.

An important factor in farmers' attitudes toward livestock programs is the general realization that a feed grain program provides an effective program for much of the livestock industry. The long-run stability of the hog-corn and the steer-corn ratios indicates that livestock feeding is responsive to the price margin. Livestock feeders, _as such,_ do not need long-term protection from market forces, because output adjusts fairly readily to returns. A possible and partial exception may be shaping up in terms of a cattle feedlot cycle discussed elsewhere in this paper. Livestock feeders who are also grain producers apparently do need and desire long-term protection for their grain prices. Cow-calf operators generally benefit from more plentiful and cheaper feed grains and from increasing beef feeding and slaughter, so they have generally expressed little desire for any kind of commodity program.

Feed grain policies.--Three situations are considered:

1. Continuance of the present general availability of feed supplies and the present level of feed grain prices.

2. More abundant feed supplies at lower prices.

3. Less plentiful feed supplies at higher prices.

The prospects in situation (1) are much the same as present conditions for farmers who sell their corn through hogs. The prospects are not quite as reassuring for the cattle industry because of the phase of the traditional cattle cycle and the continued growth of feedlot capacity. Cattle feeding margins may be tight and feeder cattle prices may be high relative to fed cattle but still under downward pressure in the next few years.

What would happen if feed supplies were made more abundant and cheaper in the next few years?

1. Hog and cattle feeders, _as grain producers,_ would have reduced incomes.

2. Cattle feeding margins would be improved temporarily and the growth of feeding probably would accelerate.

3. The demand for feeder cattle would improve, so that there would be improved chances for the growing number of feeder cattle to move through the system without a major cyclical price break.

4. Consumer beef prices would probably be somewhat lower and farm prices of fed beef would be lower.

5. In summary: Cow-calf operators would be better off in the short run; commercial feedlot operators might be a little better off in the short run; the typical Corn Belt farmer-feeder would be worse off in the short run.

6. The <u>possible</u> long-term effects of a sizable reduction in land prices--resulting from reduced returns on feed grains--might make most farmers worse off in the long run.

What would happen if feed supplies were made less abundant and more expensive in the next few years?

1. Feeders, <u>as grain producers</u>, would have increased incomes.

2. The demand for feeder cattle would decline, and there would be a greater chance of a major break in cattle prices because of the present stage of the cattle cycle.

3. Consumer beef prices would be raised eventually and, after the liquidation phase of the cattle cycle, the import problem might be aggravated somewhat.

4. Cow-calf operators would be worse off in the short run; the commercial feedlots might be a little worse off in the short run; the typical Corn Belt farmer-feeder would be better off in the short run.

Program for Hogs--An Incentive Program to Reduce the Average Weight of Slaughter Hogs

The program presented here was designed to mitigate the severe effects of the usual seasonal decline in hog prices during years of cyclically large numbers. It is assumed that the program outlined will operate in conjunction with meat-purchase programs similar to those in recent past.

The program is designed for periods like the last quarter of 1959, and that period will be used to explain the program visualized. 4/

Assumptions:

1. An incentive payment of 50 cents per hundredweight for slaughter hogs marketed at 220 pounds or less would result in a reduction in average slaughter weight of 2.5 percent.

2. A reduction of 2.5 percent in total liveweight of hogs slaughtered will result in an increase of 5 percent in price.

3. When incentives are being paid, approximately one-third of hogs slaughtered would weigh 220 pounds or less and the average weight of those weighing less than 220 pounds would be 215 pounds.

In the example, price estimates were made only for the 200-220 pound weight group. It is reasonable to assume that prices in other brackets would also increase. For such a program to work, it is important that all producers be fully informed about it. However, if its effects become predictable by hog producers, it would be rendered less effective.

An experimental approach in administering the program would be necessary and feasible until some actual experience with producer response to incentive payments was obtained. Producer response will vary with available feed supplies on farms and with other factors besides the relative prices of 215-and 245-pound hogs.

4/ A similar analysis may be found in Shepherd, Geoffrey S., Rhody, Donald D., Gruebele, James W., and Dobson, William D.; Analysis of Direct-Payment Methods for Hogs to Increase Hog Producers' Incomes, Iowa Agri. Expt. Sta. Research Bulletin 514, February 1963.

Worksheet for Proposed Hog Program

	Actual 1959			Estimated if 50¢ per cwt. payment made for hogs weighing 220 lb. or less		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
Slaughter hog prices NSY, grades 1,2,3						
180-200 lb.	$13.25	$13.10	$12.49			
				(Estimated for 200-220 lb.)		
200-220 lb.	13.35	13.10	12.46	$13.35	$13.10	$12.46
				.50	.50	.50
				.67 1/	.66 1/	.62 1/
				$14.52	$14.26	$13.58
220-240 lb.	13.35	12.98	12.17			
240-270 lb.	13.17	12.62	11.62			
Commercial slaughter (1,000 head)	7,845.5	7,472.8	8,258.8	7,845.5	7,472.8	8,258.8
Average Weight	233	238	237	227	232	231
Total live-weight (mil. lb.)	1,830	1,779	1,960	1,784	1,735	1,911

Estimated Incentive Payment Cost of Program

Number Eligible (1,000 head)	2,615.2	2,490.9	2,752.9
Liveweight, assuming average weight of 215 lb. (1,000 lb.)	562,268	535,544	591,875
Incentive payment at 50¢ per cwt.	$2,811,340	$2,677,720	$2,959,375
Total cost for 3 months			$8,448,435

1/ 5 percent increase assumed from 2.5 percent decrease in average weight.

SOME ALTERNATIVE GOVERNMENT PROGRAMS FOR POULTRY

A. P. Stemberger

A discussion of Government programs for any farm commodity implies that producers of the commodity in question are faced with a problem whose solution through free market operations is either impossible or else very difficult. The problem is typically chronic. It involves production of a commodity in such great quantities that its market price is low, and net returns to most producers are not adequate to provide an acceptable living. Attaining equilibrium of supply and demand in a free, competitive market could entail such loss to producers that modification of competitive conditions by means of a Government program might be preferable. It is not clear whether producers of eggs, broilers, and turkeys now face, or will face in the future, a situation which will require a Government program. A brief review of recent developments in the poultry industry may provide some insight into future prospects of the industry.

Before World War II, eggs, chickens, and turkeys were produced on more than 3.5 million farms. Typically, flocks were small, tended by family labor, and usually part of a general farm organization. Even specialized poultry farms were small by present standards and were usually operated by the owner and his family.

After World War II, and particularly after 1950, the poultry industry underwent a period of rapid change, especially in the production of poultry meat. Although there had been a limited development in the production of young meat chickens, prior to this period poultry meat was primarily a byproduct of the egg industry.

In the early 1950's, a number of technological developments occurred which resulted in the formation of an industry specializing in the production of young meat birds (broilers) on a large scale. Automatic feeding and watering devices, specialized feeds, improved housing, new knowledge of disease control, and improved genetic qualities made possible the rearing of thousands of birds in restricted quarters.

Broiler production quickly became concentrated in the hands of specialized growers. Adoption of new technology and exploitation of economies of size in production and in allied services such as feed milling, chick hatching, and processing resulted in dramatic decreases in production costs. Rising demand, along with lower production costs, provided the stimulus for rapid expansion. At times production expanded faster than did demand, with consequent glutting of markets, but such conditions were temporary. Increasing production, even though consumption also increased, did bring lower prices but cost reductions were also occurring. After 1960, however, the increase in per capita consumption began to level off and the industry found itself in the position where its capacity could produce more than consumers were willing to buy at prices satisfactory to most producers. Further more, technological improvement had slowed

so that additional cost reductions were more difficult to achieve. Some people within the industry are considering the possibility of tailoring production to market needs.

Broilers are produced and marketed the year around. The production period is fairly short and the typical grower rears a number of broods each year. The industry has coordinated the flow of birds from farm to market by organizing itself in an integrated manner. The activities of hatcheries, feed mills, and processors are coordinated in such a manner as to assure a uniform daily flow of birds (uniform also in size and quality) through the processing plant and to retail stores. This integrated effort has contributed to lowering production costs through more economic use of resources.

Some facilities in the broiler industry are integrated through ownership; that is, all phases of production and servicing are owned by one firm. The more common form of integration is the coordination of various activities through contracts--including contracting for use of a farmer's labor and his other productive facilities. Integration makes available managerial supervision to growers, and shifts market risk from grower to others. It is a form of business organization that has been adopted in all the major broiler producing areas of the Nation. It is estimated that today about 98 percent of all broilers are produced under some form of integrated operation, chiefly of the contract type, in which the integrator furnishes the variable inputs of production and managerial supervision, makes decisions regarding flow of inputs and output, and assumes market risks, while the feeder (grower) furnishes services of labor, buildings, and equipment.

Since 1950, development of the turkey industry has paralleled that of broilers except that integration has not as yet become as dominant a form of organization as it has in broilers.

Since World War II, both the broiler and turkey industries benefited from increased per capita consumption of poultry meat. However, the rate of increase in consumption has been declining since 1960. Demand for broilers and turkeys at retail appears to be price elastic; that is, a 1-percent change in price is associated with more than a 1-percent change in sales. However, there is a possibility that at the low price levels at which these meats have been selling the past few years, demand at retail may be price inelastic--a 1-percent change in price resulting in less than a 1-percent change in sales.

Structure of the egg industry has also been changing. Production units are becoming fewer and larger; the farm flock has almost completely disappeared. While there has been some integration, it is not nearly as widespread as with broilers. This has been due primarily to the longer production period required, much greater amounts of capital needed, and slower capital turnover. It has been estimated that approximately one-third of egg production takes place under some form of integration.

Industry observers feel that integration will not become as widespread in egg production as in broilers, with perhaps only 50 percent of the Nation's egg production eventually being produced under this form of organization.

The technological developments mentioned earlier have also been applied to egg production, resulting in reductions in cost of production. However, unlike broilers and turkeys, egg consumption per capita has been declining. This decline has occurred during a period in which average egg prices have decreased, indicating a long-run decline in demand for eggs. Decreases in egg production costs have not kept pace with price declines; therefore, profit margins are narrowing. Nevertheless, returns to egg producers are evidently adequate enough to result in present day expansion of output.

In the past, there has been no chronic surplus of poultry products comparable to those in feed grains and some other commodities. There have been relatively short periods when production expansion resulted in temporary market gluts with unsatisfactory prices. But with relatively short production periods, glutted market conditions have been worked off and resulting price rises have led to expansionary pressures. The broiler industry especially has been characterized during the past few years by alternating periods of production expansion and contraction, with resultant price fluctuations. On the whole, however, prices have been such that industry returns have been adequate enough to provide impetus for expansion of output with very modest increases in price.

Consequently, in the past there has been little need for Government programs in the poultry industry. The industry has not considered itself one having great income problems; it has rejected by a producer referendum a program developed for controlling production of turkeys.

What of future needs of the industry for a program? As pointed out earlier, the industry is now characterized by large investments in fixed capital. This condition exerts a pressure to keep fixed facilities in use even during periods when prices are too low to cover all costs. Consequently, if output expansion lowers prices to unsatisfactory levels, there may not be a cutback for a much longer period than the normal short production period would indicate. In other words, output may not respond quickly to changes in price, resulting in heavy losses to the industry. This could be especially disastrous to egg producers since depressed egg prices could last for a year or more and few producers have the financial strength to weather a long period of low prices. It could also result in bankruptcy among producers of broilers or turkeys --especially those firms that are relatively weak financially.

On the other hand, developments in marketing poultry products may enable the industry to control production in line with demand. Direct marketing of poultry products has developed over the past 15 years. Broilers, turkeys, and eggs are increasingly bypassing traditional market channels and are moving direct from processor to re-

tailer. The possibilities of developing long-term contract arrangements between processor and retailer are already being considered. Such arrangements would involve negotiated prices and stipulation of services, quality, and volume over extended time periods. With such marketing arrangements, production would be limited to quantities covered by contracts--there would be no production considered surplus in the usual sense of the word. If such a development occurs, supply and demand would tend to be inbalance at prices considered favorable by producers and there would be no need for a Government program.

It should be emphasized that recent and possible future developments in the poultry industry are such that need for Government programs in the future may not arise. However, in the event that such developments do not materialize, the poultry industry may be faced with a problem of oversupply and ruinous prices. Should such an eventuality occur and the need for a program arises, three alternative programs are outlined in the ensuing paragraphs. Their discussion assumes that future supplies of eggs, broilers, and turkeys may be burdensome and that control of production implies reduction in output. The discussion is also based on the assumption that a Government program would have the following objectives:

1. To increase net income to the industry.

2. To stabilize prices within and between years.

3. To provide for efficient use of resources.

Before entering a discussion of alternative programs, it should be pointed out that the poultry industry has used inputs, principally feed grains, whose output was affected by Government programs. Although feed grain programs may have resulted in feed prices somewhat higher than would have prevailed in a free market, they have also given a stable price structure in feed grains with prices to producers being fairly close to support levels. Also, feed grain programs probably kept potential poultry producers in the feed grain business at a time when greater poultry producer numbers might have proved onerous. In this paper it is assumed that levels and stability of feed prices will approximate those over the past decade and that some sort of Government program will be in effect in feed grain production.

Poultry Marketing Orders

The alternative to be discussed first is a marketing order (for either eggs, broilers, or turkeys) with no control over production. Such a program would be designed to promote orderly marketing of poultry products and attain income objectives by diverting supplies from primary to secondary uses. The mechanism of operation would be through differential prices according to use of product. Supplies could be diverted to secondary uses by manipulation of size and quality designations for

primary use. Size and quality specifications for primary use could be relaxed or tightened, depending upon the magnitude of total supplies available. Producers would receive a blend price that would vary according to proportions of total output going into various uses. Total revenue to the industry for a given amount of output would be maximized.

For marketing orders to be successful, various uses of the commodity should have differing market demand elasticities. Also, primary and secondary uses of the commodity should not be directly competitive. An example can be drawn from various uses of milk. Fluid use is considered a primary use, while milk in cheese is a secondary use. Cheese does not compete directly with fluid milk in consumer use.

At present, eggs, broilers, and turkeys have few secondary uses and most of these compete directly with the primary use. For example, frozen whole eggs may be considered a secondary use of shell eggs. However, their use competes directly with shell eggs in the baking industry and would compete directly with shell egg use in the home if the frozen product were available in consumer size containers.

The same thing is true of broilers and turkeys; secondary products available compete with the primary use. One exception is that these two products could be manufactured into pet foods. However, the pet food field is highly competitive and diversion of poultry meats to this use might have to be accomplished at such low prices that prices of poultry meats in primary use would have to increase sharply if blend prices to poultry meat producers were to be kept at a satisfactory level. This lack of noncompeting uses for poultry products presents a serious obstacle to successful operation of a marketing order.

A marketing order could be difficult to administer and police in the egg industry and to some extent in the turkey industry. This is because of direct marketing on the part of producers who might not be willing (or not be able) to divert a proportion of supplies to secondary uses. Also, size and quality specifications may have to be changed so often to obtain desired diversions (especially for broilers) that considerable confusion could exist among the trade, and consumer acceptance of quality standards could be eroded.

If, in spite of the obstacles mentioned above, a marketing order for any of the poultry commodities were successful in increasing returns to producers, expansion of output would quickly occur because of the short production period required and there would be downward pressure on prices over time unless the Government were willing to buy poultry products. But any purchases that were effective in maintaining satisfactory prices to producers would only evoke greater production. To make marketing orders work, the Government would have to be willing to buy ever increasing amounts of poultry products. This could become a very expensive program.

It would appear that for a marketing order to work, some form of production control would be needed. Such an imposition, however, makes the program one of control rather than a marketing order. Consequently, discussion of a marketing order will be carried no further; rather, some form of production control will be considered.

Input Control

The alternative to be discussed next is input control. This could be accomplished by controlling the number of eggs set, the number of chicks or poults raised, or the amount of floor space used.

At this point a digression regarding distribution of income benefits from control program is in order. Income benefits due to control of inputs or outputs accrue to that phase of an industry at which controls are applied. In the poultry industry, controls can be applied at the breeder, hatchery, or producer levels. Benefits in both the short run and the long run will go to the level at which controls are applied. Consequently, the problem arises as to whether program benefits should go to breeders, hatcherymen, or producers.

Furthermore, if controls are imposed at the producer level, integration, especially in the broiler industry, presents a problem in benefit distribution. For those operations that are owner-integrated, there is no problem. Since all phases of production are owned by one firm, benefits would accrue to the owner regardless of the phase to which controls were applied. However, for operations integrated through contracts, phase of application is important. The question to be resolved in this case is: Who is the producer? The integrator is the one who makes decisions, invests capital, furnishes managerial supervision to growers, and takes most of the market risk. He may not grow any birds, however. Birds are reared, under supervision, by a person, usually a farmer, who furnishes the labor and capital investment required for growing operations.

Who the producer is will not be defined here; neither will the decision as to the production phase at which controls should be applied be made here. These are matters for the industry or legislative bodies to resolve, but resolved they must be before direction of benefit flows can be made.

Controlling Eggs Set

Annual quotas regulating the number of hatching eggs set could be allotted to existing hatcheries. Limiting hatching eggs set would decrease chick or poult numbers at the hatchery level, and producers trying to keep their facilities utilized would bid up chick prices to the point where most of the program benefits would accrue to hatcheries and hatching egg producers delivering eggs of better than average hatchability. Use of production resources would be efficient since in the bidding process

chicks would tend to go to the more efficient producers, who could afford to pay more for them. However, existing, inefficient hatcheries would tend to be perpetuated in business.

Limiting Breeder Numbers

Annual quotas regulating the number of chicks reared for breeders could be allotted to existing owners of foundation breeding stocks. Such allotments would curtail breeder numbers, amounts of eggs available for hatching, and consequently the number of chicks or poults. Program benefits would accrue to present owners of breeding stock. Competition for chicks would result in chick distribution to the more efficient producers. This would promote production efficiency; however, this might be offset somewhat by perpetuation of less efficient producing strains and breeds of birds and it might reduce incentive for continued genetic improvement of breeding stock.

Controlling Birds Raised by Producers

Annual quotas regulating the number of chicks or poults started could be allotted to present producers. For integrated operations, definition of producer becomes important. If quotas are allotted to the integrator, income benefits will tend to accrue to him. Although he may pass on some of these benefits to persons providing labor and production facilities, he doesn't have to. The second group could conceivably bargain for some of the benefits, but bargaining power would lie in the hands of the integrator since he could always erect his own growing facilities and produce his allotment with hired labor. On the other hand, quotas allotted at the grower level would direct income benefits to those who furnish labor and facilities. In either case, the program would freeze production patterns in the hands of those presently in business unless quotas were made negotiable. The less efficient producer would be maintained in business, thus resulting in some misallocation of resources and a somewhat less efficient industry.

Control of Floor Space

Input control could be obtained by quota allotments of floor space used in brooding or production. Presumably space allotments would be granted to owners of floor space; consequently, the problem of defining ownership would not be complicated by integrated organization. Income benefits would accrue to that person who owned the capital invested in floor facilities.

Allotments of floor space present a problem in controlling the number of birds or eggs produced. Birds (both meat and egg type) can be crowded, and broiler production periods can be shortened. Although allotments could be lowered to offset increased crowding, the producer, for any given allotment of floor space, would feel under pressure to crowd birds. This could lead to lower quality broilers, greater disease and condemnation problems, poorer feed conversion, and higher production costs. In egg production, crowding could result in lower production per bird, poorer feed conversion, increased mortality, and higher production costs. The higher production costs would tend to reduce income benefits.

Like chick allotments, floor space allotments would tend to preserve present production patterns, keep the inefficient producer in business, and result in misallocation of resources.

Attaining Objectives

In order for input control to attain the three objectives set forth earlier, a program would have to provide for certain situations. The first objective could be attained by any of the methods of input control discussed above. More will be said about this later. Objective two can also be met so far as the egg industry is concerned because egg production is a year-round enterprise with roughly an 18-month production cycle. Stable egg prices can be attained within the normal seasonal variation pattern.

Broilers and turkeys, however, have a much shorter production cycle, and production within allotted annual quotas could be much greater in one part of the year than another. This could lead to depressed prices part of the year and high prices at other times. Such fluctuation in production and prices could be prevented by a provision that apportions allotments by production periods of appropriate length; that is, allotments on a production period basis rather than an annual basis.

Provisions would also have to be established for a policing program against violators. Policing could be done by county committees, such as those set up to help administer other agricultural programs. A further check could be obtained by owners of processing plants, most of whom operate under Federal inspection and have supervisory personnel already on the premises, and who make reports of number of poultry slaughtered. The easiest program to administer would be one imposed on the breeder or at hatchery level since the number of business units to be supervised would be small. To discourage circumvention of program provisions, penalties would need to be levied on violators; such penalties should be severe enough to preclude any financial benefit to the violator.

To promote efficient use of resources, the program should make provision for enabling production to be concentrated in the hands of the most efficient producers, both present and potential. One method by which this could be accomplished is by making sale, rent, or lease of allotments possible. Over a period of time allotments would tend to go to the most efficient producers located in areas with the greatest comparative advantage in poultry production. Also, the program should provide for increase in production allotments, over a period of time, should such be needed.

Output Control

The third alternative considered is that of controlling output. Such a program would consist of allotment of annual marketing quotas to production or marketing units. Such quotas could be in terms of pounds of meat, numbers of meat birds, or numbers of eggs at the producer or processor level. If in terms of numbers of meat birds, there

would be a tendency for birds to be reared to heavier weights than now; however, this tendency would be limited by market definition of what constitutes a broiler and by consumer resistance to large turkeys. In other words, quotas on bird numbers could be as satisfactory as quotas on poundage and would have some advantage in administration.

At the producer level, controlling output rather than inputs in egg production does allow for somewhat more efficient use of resources. Imposing controls on number of layers creates a tendency toward heavier feeding and use of breeds or strains that produce large numbers of eggs but of a smaller size. Controlling egg output gives the grower more flexibility in choice of technology and tends to promote more efficient resource combinations. The same is true of broiler and turkey production; output control allows for more efficient use of resources, especially when compared to control of inputs through floor space.

Marketing quotas could also be allotted to poultry meat and egg processors. In this case, income benefits would flow to processors. Efficiency in production would be attained by producers bidding for market outlets able to take smaller quantities of product. Such bidding for markets would tend to favor survival of only the more efficient producers.

For an output program to succeed, supervision would be needed. Administrative supervision could be accomplished through county committees. Compliance with program provisions could be checked at the processor level for meat birds and at the egg dealer level for eggs. If the program were imposed at the producer level, producers would be given marketing certificates which they would surrender to the processor upon marketing. In the case of producers marketing directly to consumers (important principally in egg marketing and somewhat in turkey marketing), supervision would be somewhat more difficult. Penalties for violation of provisions severe enough to preclude financial gain to the violator could deter cheating.

If the program were operated so as to obtain large income benefits to producers and small producers were exempt from its provisions (a popular technique in many past programs), the establishment of many small flocks could be anticipated. Their activities would make program supervision and successful operation difficult, if not impossible. However, if income benefits were geared to successful operation of efficient businesses, this leakage would probably not be a great problem.

As in the case of input controls, net revenue to the industry can be increased through control of output. More will be said about this later. To achieve price stability within a given year, marketing quotas would have to be given on the basis of length of production period to prevent the possibility of periodic gluts and scarcities in broilers and turkeys. Annual quotas would attain the objective in the egg industry. Also, since quotas could seldom be exactly met in any given production period, pro-

ducers should have the privilege of borrowing on or saving their quotas, within fairly narrow limits, for any given production period.

To promote efficiency in the industry, marketing quotas should be made subject to sale, rent, or lease. This would provide for concentration of production in the hands of the more efficient producers and would enable new producers and new areas to enter the industry, thus allowing for most efficient production in areas of greatest comparative advantage. Also, provision would need to be made for increasing quotas over a period of time.

Some General Comments

The foregoing has been a rather brief outline and analysis of three possible alternatives. However, something needs to be said about the possible effects of programs on such subjects as farm income, Government costs, etc. Since marketing orders do not appear to offer much hope in meeting the objectives set forth earlier, they will not be discussed here.

Controlling egg production either by production allotments or marketing quotas would increase net revenue to the industry, although not necessarily to each individual producer. Demand for eggs is generally believed to be highly price inelastic; that is, a 1-percent change in price is associated with less than a 1-percent change in quantity sold. Reducing output increases price more than proportionally in relation to output; thus total revenue to the industry is increased. Lower output results in lower total costs; thus net revenue to the industry is increased.

With regard to broilers and turkeys, the situation may be somewhat different. Demand for these products at retail appears to be price elastic, and is likely to be elastic at the farm level as well. If it is, then reducing output will decrease total revenue to the industry. Total costs will also decrease; net revenue can increase only if total costs fall faster than total revenue. This will occur if the great proportion of total costs are variable costs--if there were no fixed costs, total costs would fall in the same proportion as output. There is a good possibility that the cost structure of broiler and turkey production is such that restricting output, even with demand elastic, will increase net revenue to the industry. Feed and chick (or poult) costs alone comprise approximately 90 percent of total costs; both of these items are variable costs that would be reduced with lower output.

There is also a possibility that at present low levels of broiler and turkey prices demand may be price inelastic. If it is, then restricting output would definitely increase net revenues to the industry. It should be emphasized that elasticity of demand at present price levels is <u>not definitely known</u>, but some industry observers <u>believe</u> it may be inelastic.

Costs of a program to the Government are a matter of importance. The alternatives discussed are based on the fact that there is at present no great chronic

surplus of eggs, broilers, and turkeys as there are surpluses of feed grains, cotton, etc. Supplies of all three commodities move into current consumption but sometimes at prices not too satisfactory to producers. It is believed that a slight cutback in output is all that is necessary to result in prices that will provide financial returns to efficient producers sufficient to encourage them to produce. Consequently, the programs do not contain any provisions for price support or subsidy. Government agencies would not buy or store except for normal purchases such as for the Armed Forces or school lunches. Therefore, no great costs to the Government are expected. Costs incurred would be largely administrative and primarily concerned with supervising and policing the program selected.

The effect of any of the above programs on food prices to consumers should be slight if the program is operated with output reductions sufficient only to give efficient producers returns adequate to continue production. With allotments allowed to be sold, rented, or leased, production over time would tend to be concentrated in the hands of the most efficient producers and areas. While prices to consumers at initiation of the program may go up slightly, over a period of time such prices would tend to drop if a program were operated at levels calculated to put pressure on efficiency. The industry is now operating at return levels such that slight to moderate price increases would give returns to efficient producers adequate enough to encourage further production.

Any of the programs would have little effect on our foreign trade in the three commodities. We export or import very few eggs. Our broiler and turkey exports are relatively small and our imports are practically nil. There appears to be little likelihood that foreign producers will be exporting any of these commodities to the United States in the near future. Only in the event that a control program would be operated to significantly restrict output and increase prices would there be an incentive for foreign producers to ship to the United States and bring up a problem in international trade relations.

If output were not severely restricted and allotments or quotas were transferable, there would be little effects of the programs on cost of producing eggs, broilers, and turkeys. Economies of size in production of these commodities and in related activities such as hatching, feed milling, and processing are attained as relatively low levels of output. It is not anticipated that output would be restricted to such an extent that firms would be pushed to greatly increased cost positions on the economies to size curve. The greater proportion of costs involved in the production of the commodities and in performing related services are variable costs which are reduced along with output. While there are fixed costs, these are believed to be relatively low and reductions in output would not increase fixed costs per unit greatly unless output restriction were severe. Furthermore, so far as individual producers are concerned, transferability of allotments and quotas would make possible business growth and exploitation of size economies and possibly even lower costs per unit than at present.

Location of production would depend on whether allotments and quotas were made available for sale, rent, or lease. If they were, as has already been stated, production would tend to concentrate, over time, in hands of most efficient producers in areas having the greatest comparative advantage.

It was pointed out earlier that in the past the poultry industry has enjoyed a relatively stable feed price structure. Should this stability be overthrown, administration of a program to attain the objective of increasing net returns to the industry would become difficult. Feed comprises between 50-60 percent of egg production costs and over 75 percent of broiler and turkey production costs. Therefore, significant changes in feed prices occurring after production allotments have been made could increase costs to an extent great enough to lower net returns. Should significant feed price fluctuations occur frequently, successful operation of a program would be virtually impossible.